

## Term Information

Effective Term Spring 2017  
*Previous Value* Summer 2012

## Course Change Information

**What change is being proposed? (If more than one, what changes are being proposed?)**

We propose creation of an online version of this existing course - Linguistics 2001

**What is the rationale for the proposed change(s)?**

An online option of this GE and Major course will be available to non traditional students who work during the day, and to students during the summer semester/s who are not living in or near OSU's campus.

**What are the programmatic implications of the proposed change(s)?**

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

None

**Is approval of the request contingent upon the approval of other course or curricular program request?** No

**Is this a request to withdraw the course?** No

## General Information

Course Bulletin Listing/Subject Area Linguistics  
Fiscal Unit/Academic Org Linguistics - D0566  
College/Academic Group Arts and Sciences  
Level/Career Undergraduate  
Course Number/Catalog 2001  
Course Title Language and Formal Reasoning  
Transcript Abbreviation Lang Formal Reason  
Course Description How natural and artificial languages are alike in structure and use in reasoning; how natural languages differ in principles of use by humans.  
Semester Credit Hours/Units Fixed: 3

## Offering Information

Length Of Course 14 Week, 12 Week, 8 Week, 7 Week, 6 Week, 4 Week  
Flexibly Scheduled Course Never  
Does any section of this course have a distance education component? Yes  
Is any section of the course offered 100% at a distance  
*Previous Value* No  
Grading Basis Letter Grade  
Repeatable No  
Course Components Lecture  
Grade Roster Component Lecture  
Credit Available by Exam No  
Admission Condition Course No  
Off Campus Never  
Campus of Offering Columbus

## Prerequisites and Exclusions

Prerequisites/Corequisites  
Exclusions

Prereq: Math 075 or equiv, or Math placement level R.  
Not open to students with credit for Linguist 280.

## Cross-Listings

Cross-Listings

## Subject/CIP Code

Subject/CIP Code	16.0102
Subsidy Level	General Studies Course
Intended Rank	Freshman, Sophomore, Junior, Senior

## Requirement/Elective Designation

General Education course:  
Mathematical or Logical Analysis  
The course is an elective (for this or other units) or is a service course for other units

## Course Details

Course goals or learning objectives/outcomes

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

*Previous Value*

Content Topic List

- The structure and meaning of basic English sentences, with particular attention paid to word classes (noun, adjective, verb) and the structure and meaning of larger constituents.
- How discourse context affects meaning in human languages.
- Linguists use formal languages to model the structure and meaning of human languages. The course covers the structure of formulas in propositional and predicate logic, as well as the semantic rules for interpreting such formulas.
- How human and formal languages are used in reasoning.

**Previous Value**

- *The structure and meaning of basic English sentences, with particular attention paid to word classes (noun, adjective, verb) and the structure and meaning of larger constituents*
- *How discourse context affects meaning in human languages*
- *Linguists use formal languages to model the structure and meaning of human languages. The course covers the structure of formulas in propositional and predicate logic, as well as the semantic rules for interpreting such formulas*
- *How human and formal languages are used in reasoning*
- *The difference between natural and formal languages, especially the degree to which the formal languages developed in the course are appropriate to model the syntax and semantics of natural languages*

**Attachments**

- Ling2001\_Technical\_Review\_MK.pdf: Technical review  
*(Other Supporting Documentation. Owner: McGory,Julia Tevis)*
- Ling2001\_Syllabus\_Online\_V3.pdf: On line syllabus  
*(Syllabus. Owner: McGory,Julia Tevis)*
- Ling2001\_Syllabus\_Spring2016\_V2.pdf: In class syllabus  
*(Syllabus. Owner: McGory,Julia Tevis)*
- Ling2001\_Syllabus\_Online\_V4.pdf: Updated Online Syllabus  
*(Syllabus. Owner: McGory,Julia Tevis)*

**Comments**

- See email *(by Hogle,Danielle Nicole on 09/22/2016 11:12 AM)*
- Online syllabus and In class syllabus have been updated to include boilerplate academic misconduct and disability statements. *(by McGory,Julia Tevis on 05/04/2016 11:33 AM)*
- Course grade percentages add to 105%; boilerplate academic misconduct and disability language is not correct. *(by Heysel,Garett Robert on 05/04/2016 10:45 AM)*

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	McGory,Julia Tevis	05/02/2016 10:58 AM	Submitted for Approval
Approved	McGory,Julia Tevis	05/02/2016 10:58 AM	Unit Approval
Revision Requested	Heysel,Garett Robert	05/04/2016 10:45 AM	College Approval
Submitted	McGory,Julia Tevis	05/04/2016 11:33 AM	Submitted for Approval
Approved	McGory,Julia Tevis	05/04/2016 11:33 AM	Unit Approval
Approved	Heysel,Garett Robert	05/04/2016 11:38 AM	College Approval
Revision Requested	Hogle,Danielle Nicole	09/22/2016 11:12 AM	ASCCAO Approval
Submitted	McGory,Julia Tevis	10/10/2016 03:26 PM	Submitted for Approval
Approved	McGory,Julia Tevis	10/10/2016 03:26 PM	Unit Approval
Approved	Heysel,Garett Robert	10/11/2016 07:53 PM	College Approval
Pending Approval	Nolen,Dawn Vankeerbergen,Bernadette Chantal Hanlin,Deborah Kay Jenkins,Mary Ellen Bigler Hogle,Danielle Nicole	10/11/2016 07:53 PM	ASCCAO Approval



# SYLLABUS: LINGUISTICS 2001 LANGUAGE & FORMAL REASONING TERM TBA

## Course overview

### Instructor & course details

Instructor: TBA

Email address: TBA

Phone number: TBA

Meeting Times – Online – Students are required to participate in classroom instruction using an online format two days each week for 1hr 20 minute sessions.

Office hours: TBA

### Course description

In this course, we will work together to investigate reasoning in **natural languages** (particularly English) and **formal languages** (symbolic systems such as first order logic), and we will examine similarities and differences between these two kinds of system. Here are some of the questions that we will address:

- How do sentences express ideas?
- How can we model meanings in natural languages using formal languages (and why would anyone want to do that, anyway)?
- How do we use sentences in natural language to engage in reasoning and argumentation?
- How can using formal languages help us to reason more effectively?
- What are the relative advantages and disadvantages of using formal languages versus natural languages to express ideas?

Over the course of the semester, we will use tools from formal languages to analyze reasoning, meaning, and linguistic structure, in a more systematic way than we would be able to otherwise. We will also look at the ways that natural languages differ from purely formal systems due to various features of human communication.

In addition, we will work to build familiarity, confidence, and facility with manipulating symbols and with problem solving. We will also spend time working on how to effectively talk about and

write about technical material that is introduced. Each of these skills and abilities can be transferred to many other situations outside the realm of the study of formal language. They are skills you will find useful both as a student in the university and in other areas of your life.

## Live sessions

Our course has a scheduled meeting time for synchronous class meetings twice each week. The length of each class, similar to in-person courses is 1 hour and 20 minutes per class. These sessions will let us go over problems together, and they'll also provide a structured time for you to work on problems with other students in the class.

Tuesday sessions will be sessions directed by your needs. We can go over previous homework problems and address other questions that you have. In general, these sessions are optional. Students who show signs of struggling on assignments will be strongly encouraged to come, however.

Thursday sessions will be focused around particular learning activities, many with groups. Most of these sessions will be mandatory. In the event that one of these synchronous sessions is not mandatory, you will receive at least one week's notice.

## Course learning outcomes

### General Education Requirement

This course fulfills GE Quantitative Reasoning: Mathematical and Logical Analysis. The university has laid out the following goals and learning outcomes for this requirement.

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

### Expected Learning Outcomes:

1. Students comprehend mathematical concepts and methods adequate to construct valid arguments.
2. Students comprehend mathematical concepts and methods adequate to understand inductive and deductive reasoning.
3. Students comprehend mathematical concepts and methods adequate to increase their general problem solving skills.

This course satisfies the learning outcome by emphasizing first order logic, analyzing natural language structure and meaning, natural language and first order logic, and the relationship between natural language and first order logic.

### Other expected learning outcomes

Students will gain familiarity with the idea that language can be modeled formally at various levels of complexity, and they will develop comfort and facility in creating, manipulating, and interpreting formalism. By the end of this course, students should also be able to successfully

- Identify propositions and relationships between propositions
- Translate between sentences of English and expressions of Propositional Logic and Predicate Logic
- Use formal tools to evaluate whether an argument is deductively valid
- Discuss and explain how and why the formal systems work the way they do
- Analyze everyday use of day-to-day language in terms of formal concepts discussed in class

## Course materials

### Required

There are no required text books for this class. All required materials will be provided either in the course shell or via other online resources with links accessible in the course shell.

### Strongly recommended supplemental materials

I strongly recommend that you have the following items:

- graph paper
- pencils
- a good eraser
- a few colored pens or pencils

Although it is possible to type all assignments that you will turn in for this class, doing so can be laborious, because as we delve into writing in formal languages, we will be making use of many symbols which do not appear on a standard keyboard, and we will also be constructing diagrams that are difficult to construct with a word processor. Most students will therefore find it easiest to write their formalism by hand.

Graph paper will help you to keep your work organized, and using pencil and eraser will help you to easily correct mistakes while keeping your work tidy. Colored pens or pencils may help you to keep track of what's going on in some of the more complex work that we do. Even if you choose to type all assignments you submit to me, you will still probably want to take notes or work on practice problems by hand, and some of the practice activities will assume that you are writing on graph paper.

## Course technology

### Baseline technical skills necessary for online courses

- Basic computer and web-browsing skills
- Navigating online materials

## Technology skills necessary for this specific course

- Ability to use text, audio, and video chat on your computer
- Uploading .pdf files to web-based locations
- If you choose to handwrite any assignments, ability to scan your work or take a high quality photograph of your work such that the work is easy to read, and ability to upload these images in .pdf files  
(Many pieces of free online software will help you convert various image formats into .pdfs. You can also drop the image files into a word processor document and then save the word processor document as a pdf file.)

## Necessary equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed
- Microphone: built-in laptop or tablet mic or external microphone
- Headphones (optional, but preferred, in order to enhance communication via the internet)
- If you choose to handwrite any assignments, access to a scanner or a digital camera or other device that will take good quality digital photographs

## Necessary software

- Any word processing software will be sufficient to prepare assignments for this class. If you choose to turn in typed assignments with formalism, you will need to be able to type the following eleven special symbols in addition to regular text:

$\neg \wedge \vee \rightarrow \leftarrow \leftrightarrow \forall \exists \equiv \neq$

Most word processors have these symbols available in a menu of symbols. You may also use a function editor if you are familiar with using one, but doing so is not required.

## Additional support

- OSU provides academic support and resources to help all students succeed in their courses. To find out more about these services, please visit <http://ssc.osu.edu>, <http://artsandsciences.osu.edu/academics/current-students> and <http://artsandscience.osu.edu/academics/current-students>

# Assignments & Grading

## Grade allocation

Assignment or category	Percentage of Grade
Quick Checks & Group Activities	15%
Weekly Homework Assignments	20%
Problem sets (total of 5 at 13% each)	65%
<b>Total</b>	<b>100%</b>

See course schedule, below, for due dates

## Assignment types

### Quick Checks & Group Activities – 15%

20% of your grade will be determined by your completion of small assignments that will help you to check your understanding as you proceed through the course. **Quick Checks** will be short activities, each only a few questions, that will allow you to check your understanding of new material as you encounter it in readings or videos. These questions may be matching, multiple choice, or other similar formats. You will have the opportunity to retry each as many times as you need in order to find the correct answers. **Group Activities** will typically take place during our scheduled synchronous class meeting sessions, and they'll be opportunities for you to work on problem solving with other students in the class.

### Weekly Homework Assignments – 20%

An additional 20% of your grade will be determined by weekly homework assignments. Homework assignments will be graded for completeness and thoughtfulness rather than correctness. Your homework grade will be determined simply by whether you have completely and thoughtfully attempted every homework assignment. You are both permitted and **strongly encouraged** to work with one another on the homeworks. In my experience, the students who are most successful in this course are those who work and study regularly with others.

### Problem Sets – 65%

The remaining 65% of your grade will be determined by your performance on five problem sets, which will be assigned every three weeks (in place of a weekly homework). The problem sets will mark the end of each unit of material. Problem sets will be similar to homework assignments, but they will cover more material, and you will be required to complete them on your own, without help from others. Problem sets will serve three purposes. First, they will let



you demonstrate your ability to solve problems similar to those found in the daily homeworks; second, they will provide opportunities to apply concepts from those problems to new kinds of data; finally, they will ask that you write short reflective essays about the material found in that problem set.

## Grading scale

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

## Late assignments

Quick checks, group activities, and homework activities will not be accepted late. Problem sets will be accepted within one week of the assigned due date but will receive a 10% lateness deduction. In the case of documented extenuating circumstances (extended illness, family emergency, and so on), students should contact me as soon as possible to determine what alternate arrangements can be made.

# Communication & Feedback

## Technical support

Remember that you can call **614-688-HELP** at any time if you have a technical problem. They will be better equipped to assist with technical difficulties than I will.

## Turning in written assignments

There are two ways you can turn in written assignments. You can submit a .pdf file of your work to a designated dropbox (TBA) online or, for students who are in the Columbus area, you may turn in a physical copy of your work to my mailbox. Students who turn in physical copies of their work will also be responsible for retrieving their work in order to see the feedback.

## Grading and feedback

Answers to quick checks will be made available immediately upon completion. Homework answer keys will be provided immediately after they are due.

Feedback on group work and problem sets will typically be provided within one week of when they are turned in.

## Communicating with your instructor in an on-line course

One of the things that I really value about teaching is being able to develop relationships with students over the course of a term. The online nature of our course means that necessarily I will not directly interact with each of you as much as I would in a face-to-face course. It's therefore **your** responsibility to make sure you contact me if you are experiencing challenges or want more help with something—or if you're finding things too easy and want some more enrichment! I promise you that I want to help you, but since I can't read minds, you have to let me know, okay?

## Office hours

I will hold weekly drop-in in-person office hours for two hours each week in my office in Columbus. If you are located in Columbus and available, I would encourage you to come to meet with me in person. I will also designate an hour each week that I will hold open for online office hours via the internet. If you would like to meet during online office hours or schedule an appointment at a different time, you should contact me via email.

## E-mail

I will reply to e-mails within 24 hours on school days.

## Discussion boards

There will be two discussion boards for this class.

One is the "**Course Communications**" discussion board. That's where you should go for general course information or questions you'd like me to address—for example, questions about assignment schedules, or clarifying assignment guidelines. I will check and reply to messages in the "Course Communication" discussion board every 24 hours on school days. Also, you should feel free to respond to each other! If a student asks a question about when an assignment is due and you know the answer, you don't have to wait for me! By all means, help each other out. Know, though, that I'll monitor this board regularly, and I'll make sure that all questions do get answered.

The other is a "**Student Conversation**" discussion board. This is a discussion board I'm creating so that students can collaborate on course work, discuss assignments and class material with each other, or even plan meetings with each other. You can think about it as being like a library

meeting room that's permanently reserved for you to go hang out with each other. I will probably stop by this discussion board from time to time to say hello and see how things are going, but I won't monitor it regularly. (Thus, if a question comes up in the "Student Conversation" board that you want me to address, you should let me know over on the "Course Communications" board or call it to my attention during one of our class sessions.)

## Attendance & participation

### Student participation requirements

Because this is a distance-education course, your attendance is based on your online activity and participation. The following is a summary of everyone's expected participation:

- **Logging in: AT LEAST ONCE PER WEEK**  
Be sure you are logging in to the course each week, including weeks with holidays or weeks with minimal online course activity. This is a university-wide guideline for online courses. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me as soon as possible.
- **Live sessions: OPTIONAL ON TUESDAYS, MANDATORY ON (MOST) THURSDAYS**  
Our course has a scheduled meeting time for synchronous class meetings twice each week. The length of each class, similar to in-person courses is 1 hour and 20 minutes per class. These sessions will let us go over problems together, and they'll also provide a structured time for you to work on problems with other students in the class.  
Tuesday sessions will be sessions directed by your needs. We can go over previous homework problems and address other questions that you have. In general, these sessions are optional. Students who show signs of struggling on assignments will be strongly encouraged to come, however.  
Thursday sessions will be focused around particular learning activities, many with groups. Most of these sessions will be mandatory. In the event that one of these synchronous sessions is not mandatory, you will receive at least one week's notice.

## Other course policies

### Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Tone and civility:** In all class communication, let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. The discussion boards exist in order for students to be able to work and learn together and to help each other with the course material. The best way to accomplish that is to maintain an environment where everyone feels welcome and comfortable. Remember that sarcasm doesn't always come across online, so be mindful of how your message might come across to another student who is reading it without being able to hear you.
- **Writing style:** The discussion boards in this class are places for us to casually exchange information. Therefore, informality (even including an occasional emoticon!) is fine. I will speak casually, too. That said, please do write using correct spelling and punctuation. Your communication on the discussion boards is part of your participation in an academic course, so a somewhat more formal style is called for here than, say, while eating pizza with your roommate at midnight.

## Academic integrity policy

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct at <http://studentlife.osu.edu/csc/>.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages ([COAM Home](#))
- *Ten Suggestions for Preserving Academic Integrity* ([Ten Suggestions](#))
- *Eight Cardinal Rules of Academic Integrity* [www.northwestern.edu/uacc/8cards.htm](http://www.northwestern.edu/uacc/8cards.htm)

## Accommodations for accessibility

### Requesting accommodations

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

### Accessibility of course technology

This online course requires use of Ohio State's online learning management system and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with me.

- [Online accessibility](#)
- Streaming audio and video
- Synchronous course tools

### Self-care

A recent American College Health Survey found that such concerns as stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other and alcohol use are among the top ten health impediments to academic performance.

You should know that you do not have to face these concerns alone. Students who experience personal problems or situational crises are encouraged to contact the OSU Counseling and Consultation Services for assistance, support, and advocacy: (614)292-5766, <http://www.ccs.ohio-state.edu>. These services are free and confidential.

I also recommend that all students familiarize themselves with the services provided by OSU's Student Advocacy Center, <http://advocacy.osu.edu/academic/>. This office can provide guidance and support for academic, financial, health, and other personal concerns or obstacles that may arise while you are a student.

# Course schedule

## Flow of Each Week

There will be a typical flow of each week. Of course some weeks may be different because of the beginning or end of the semester, or because of university holidays. However, in general, here's what you can expect.

Weeks will be divided in half, so that from Monday morning through Thursday evening you are working on learning new content, and from Thursday evening through Monday morning, you have a homework assignment or problem set that lets you show off that new knowledge. Here's more detail.

**Mondays** the homework or problem set from the previous week will be due, and we'll officially begin a new week in the course! (You'll have from Monday until Thursday to look at readings or videos for the week and do any quick-check activities.)

**Tuesdays** will feature an optional synchronous class meeting. Although these sessions are optional, I do strongly recommend that you attend. You'll be able to ask questions both about the previous homework and about current topics.

**Wednesdays** don't have anything in particular scheduled. You can continue working on the content of the week.

**Thursdays** will feature a mandatory synchronous class meeting. You should complete the week's content work before our Thursday sessions to make sure you're ready for the activities. Then, the next homework assignment or problem set will be made available after our Thursday session.

**Friday through Sunday** will be a chance for you to work on homework assignments or problem sets. Remember that you're encouraged to work with each other on homework assignments, but you must complete problem sets on your own.

## Units

The course will be broken up into five units, such that each unit will span three weeks of the course. A problem set will be assigned at the end of each unit in order to let you show off the skills and knowledge that you have acquired during that unit.

- **Conceptual Overview: Language & Ideas**

In the first unit, we'll begin by thinking about the notion of language in general terms. We'll ask what makes languages special among communication systems of the world, and we'll look at how languages communicate ideas.

- **Introducing Propositional Logic**

In the second unit, we will start our study of a formal language, propositional logic. You will learn how expressions of propositional logic are structured, and how they

communicate meaning. You'll also learn to translate between English and propositional logic.

- **Arguments & Deductive Validity**

In the third unit, we will look at a way to apply our new knowledge of propositional logic: using it to test for argument validity. We'll talk about different kinds of arguments, and address the question of what makes an argument valid. You'll also learn two techniques that allow you to use propositional logic in order to test for argument validity.

- **Introducing Predicate Logic**

In the fourth unit, we'll study a different formal language—predicate logic. You'll see how predicate logic preserves a lot of the functionality of propositional logic while simultaneously allowing you to express more complex ideas and relationships between ideas.

- **Future Directions**

In our final unit, we'll take on some advanced topics. First we'll try our hand at expressing some very complicated ideas in predicate logic. Then we'll look back on the trajectory that our study of formal language has taken, and we'll speculate about how one might design other formal languages that are even more complex and sophisticated than the two we've studied so far.

## Calendar of topics and assignments

Unit	Week	Dates	Topics	Assignments
Conceptual Overview: Language & Ideas	1	TBA	<ul style="list-style-type: none"> <li>• What is a language?</li> <li>• Thinking about beliefs</li> <li>• Propositions, sentences, &amp; utterances</li> <li>• Consistency</li> </ul>	<ul style="list-style-type: none"> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
	2	TBA	<ul style="list-style-type: none"> <li>• Truth values &amp; truth conditions</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 1</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
	3	TBA	<ul style="list-style-type: none"> <li>• Propositions have many parts</li> <li>• Simple &amp; complex propositions</li> <li>• Moving from natural languages to formal languages</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 2</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
Introducing Propositional Logic	4	TBA	<ul style="list-style-type: none"> <li>• The syntax and semantics of propositional logic</li> <li>• Translating between English and propositional logic</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Problem Set 1</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>

	5	TBA	<ul style="list-style-type: none"> <li>• A closer look at scope</li> <li>• Equivalency &amp; Equivalency laws</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 3</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
	6	TBA	<ul style="list-style-type: none"> <li>• Deriving and recognizing equivalency</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 4</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
Arguments & Deductive Validity	7	TBA	<ul style="list-style-type: none"> <li>• Using propositional logic to draw conclusions</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Problem Set 2</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
	8	TBA	<ul style="list-style-type: none"> <li>• Introduction to arguments</li> <li>• Inductive and deductive reasoning</li> <li>• Formal validity</li> <li>• Testing validity using truth tables</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 5</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
	9	TBA	<ul style="list-style-type: none"> <li>• Testing validity using truth trees</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 6</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
Introducing Predicate Logic	10	TBA	<ul style="list-style-type: none"> <li>• Introduction to predicate logic</li> <li>• Breaking propositions into predicates</li> <li>• The basics of syntax in predicate logic</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Problem Set 3</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
	11	TBA	<ul style="list-style-type: none"> <li>• The existential quantifier in predicate logic</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 7</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
	12	TBA	<ul style="list-style-type: none"> <li>• The universal quantifier in predicate logic</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 8</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
Future directions	13	TBA	<ul style="list-style-type: none"> <li>• Using predicate logic to convey complex meanings</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Problem Set 4</b> due on Monday</li> <li>• Quick-check activities due between Monday and Thursday.</li> </ul>
	14	TBA	<ul style="list-style-type: none"> <li>• Future directions: what ideas</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Homework 9</b> due on Monday</li> </ul>



			can we still not express in our formal language, and how might we meet those challenges with more complex languages	<ul style="list-style-type: none"><li>• Quick-check activities due between Monday and Thursday.</li></ul>
	<b>Finals week</b>	<b>TBA</b>		<ul style="list-style-type: none"><li>• <b>Problem Set 5</b> due at the scheduled final exam period</li></ul>

# Linguistics 2001: Language & Formal Reasoning

## Spring 2016

Class Meetings:	Monday/Wednesday/Friday 10:20-11:15, Caldwell Lab 177
Instructor:	Sharon Ross, <a href="mailto:ross.583@osu.edu">ross.583@osu.edu</a> (Please note: this is NOT a buckeye mail account!)
Office:	Ohio Stadium 110 D (Enter through the glass doors by gate 24. Go up one flight of stairs and turn left into the first carpeted hallway. My office is the fourth door on the right.)
Mailbox:	Ohio Stadium 110 L (Enter through the glass doors by gate 24. Go up one flight of stairs and turn left into the second carpeted hallway. The lounge is the second door on the right.)
Office Hours:	Tuesdays 11:00 – 12:00; Fridays 11:30 – 12:30; also by appointment
Course Coordinator:	Dr. Hope Dawson, Ohio Stadium 109 C, <a href="mailto:dawson.165@osu.edu">dawson.165@osu.edu</a> ; 292-5420

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### Course Description

In this course, we will work together to investigate reasoning in **natural languages** (particularly English) and **formal languages** (symbolic systems such as first order logic), and we will examine similarities and differences between these two kinds of system. We'll look at how both types of system can be used to express ideas, and the relative advantages and disadvantages of each.

One of the main goals of the course will be to build familiarity, confidence, and comfort with manipulating symbols and problem solving. We will also spend time working on how to effectively talk about and write about these technical concepts. Each of these skills can be transferred to many other situations outside of this class. They are skills you will find useful both as a student in the university and in other areas of your life!

### General Education Fulfillment

This course fulfills GE Quantitative Reasoning: Mathematical and Logical Analysis. The university has laid out the following goals and learning outcomes for this requirement.

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

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

This course satisfies the learning outcome by emphasizing first order logic, analyzing natural language structure and meaning, natural language and first order logic, and the relationship between natural language and first order logic.

### Required Materials

There is no required text book for you to purchase this course. Readings, handouts, worksheets, and other materials will be made available via Carmen. However, you will need to have several supplies. **You will need to have graph paper, a pencil and eraser, and a stapler.** You may also find it helpful to have several colored pencils or pens.

## Accommodation of Special Needs

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

## Course Requirements

### 1. **Class work and In-class Discussion : 10%**

The best way to learn is to engage in class! You can participate by asking questions, answering others' questions, suggesting strategies for solving problems, volunteering your solutions to problems, working on class activities in groups with your peers, and so on. Your class participation grade will be determined according to the rubric on the "More about Class Participation" handout.

### 2. **Homeworks: 20 %**

Written assignments will be due most days that the class meets (with the exception of days that problem sets are due). Homeworks will be posted on Carmen each day following class before 5:00 p.m. on that day. You are both permitted and **strongly encouraged** to work with one another on the homeworks.

Homework assignments will be graded for completeness and thoughtfulness rather than correctness. Your homework grade will be determined simply by whether you have completely and thoughtfully attempted every homework assignment. Every student will get two free homework passes, so you can miss two homeworks during the term without an adverse effect on your grade. Specific directions for homework assignments can be found on the "More about Homework Assignments" handout.

### 3. **Problem Sets: 70% (7 at 10% each)**

Problem sets—which you can think of as longer homework assignments—will be due at the beginning of class every other Monday that the course meets. Here are those dates: January 25<sup>th</sup>, February 8<sup>th</sup>, February 22<sup>nd</sup>, March 7<sup>th</sup>, March 28<sup>th</sup>, April 11<sup>th</sup>, and April 25<sup>th</sup>.

Problem sets will be similar to homework assignments, but they will cover more material, and you will be required to complete them on your own, without help from others. Problem sets will serve three purposes. First, they will let you demonstrate your ability to solve problems similar to those found in the daily homeworks; second, they will provide opportunities to apply concepts from those problems to new kinds of data; finally, they will ask that you write short reflective essays about the material found in that problem set.

## Grading Scale

Numerical grades will be converted into letter grades as follows. I reserve the right to round grades up or down to the nearest whole number based on improvement and effort shown over the course of the term.

93 – 100: A	87 – 89.9: B+	77 – 79.9: C+	67 – 69.9: D+
90 – 92.9: A-	83 – 86.9: B	73 – 76.9: C	60 – 66.9: D

80 – 82.9: B-

70 – 72.9: C-

Below 60: E

## Course Policies

### 1. Common Courtesy

The following guidelines should help make class more pleasant for all of us.

- If you have a cell phone or a pager, please make sure that it never rings during class.
- Plan to come to class on time, and stay for the entire class. If you need to arrive late or leave early, please let me know ahead of time, sit near the door, and be discreet.
- If you schedule an appointment with me, come when you say you will.
- If you have a question about a grade, please approach me courteously outside of class.
- During our class discussions, listen respectfully to the contributions of your peers.
- This is the sort of class in which students will routinely need to volunteer, e.g., to share their answers on the board. Please be willing to volunteer. We are all in this together!
- Likewise, please be aware of your peers, and make sure that you are not a “hyper-active volunteer”; help me to make sure that every student has the opportunity to contribute.

### 2. Common Sense

There are a few points that can only be considered common sense. Nevertheless, I want to make sure that they are spelled out here:

- Come to class prepared: have something to write with and on. Bring all assigned readings and current handouts or assignments so that you may refer to them as necessary.
- Make sure that any written work you turn in is legible.
  - Although typing is welcome, you are likely to find it easier to write most assignments up by hand. **Please write neatly.**
  - Use pencil or a dark color of ink (e.g., no hot pink, please!)
  - If your ink “bleeds through” then write on only one side of the page; otherwise, feel free to write on both. Same for computer printouts: using both sides is fine.
  - Space your work out on the page so that symbols don’t run together; also, leave margins or other room for me(and you!) to make comments. If you have large handwriting, skip lines.
- Keep all graded work at least until after you receive your official course grade at the end of the semester. Especially because most of your work will be handwritten, it is very important that you keep track of it in case questions arise about the work later in the term.

### 3. Attendance and Absence

You should consider regular attendance to be a requirement for passing this class. I do not teach directly from any text, so if you miss a class session, you will miss important information, and I generally will not “re-teach” in order to catch you up following an absence. However, there is no part of your grade that is a direct reflection of your attendance; my general attitude toward attendance is that you are an adult and you know when you need to be in class and when it is more important for you to be somewhere else. I will take roll each day because I am interested in knowing who is in class, but whether or not you are present will not make me think better or worse of you as a person, nor will it directly influence your grade, so long as absence doesn’t become a trend.

If you should need to miss a class, here’s what to do.

- Turn in assignments **ahead of time** so you receive credit.
- Contact a classmate to copy and discuss any notes from class lectures and discussions.
- Check Carmen to get copies of handouts or homework.
- Come see me in my office hours **AFTER** reviewing any reading, handouts, and lecture notes to address any remaining questions about material you have missed.

#### 4. Late Work

**Homework:** Routine homework assignments must be turned in during class (or beforehand) on the day they are due in order to receive credit. I will not give credit for late homework. In the event of an unforeseen extended absence, you should contact me at your earliest convenience to determine whether and how accommodations can be made.

**Problem Sets:** Problem sets will be due at the beginning of class on alternate Mondays. I will deduct 10% for late problem sets turned in by Friday of the week they are due; they will not be accepted later than that. In the event that a due date presents a particular challenge to you, please come discuss it with me. I will try to be accommodating, but with the understanding that staying on top of the material will be necessary for your continuing success in the course. If you do not approach me ahead of time (at least by the Friday before the assignment is due) then I will not accept late problem sets for full credit except in the most bizarre of circumstances.

#### 5. Academic Conduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct at <http://studentlife.osu.edu/csc/>.

#### Self-Care

A recent American College Health Survey found that such concerns as stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other and alcohol use are among the top ten health impediments to academic performance. You should know that you do not have to face these concerns alone. Students who experience personal problems or situational crises are encouraged to contact the OSU Counseling and Consultation Services for assistance, support, and advocacy: (614)292-5766, <http://www.ccs.ohio-state.edu>. These services are free and confidential.

I also recommend that all students familiarize themselves with the services provided by OSU’s Student Advocacy Center, <http://advocacy.osu.edu/academic/>. This office can provide guidance and support for academic, financial, health, and other personal concerns or obstacles that may arise while you are a student.

#### Contacting me

- Know that I’m always here to help you. If there is anything you want me to know or that you wish I would change, tell me! If you ever want help, advice, enrichment, sympathy, or encouragement, ask for it! I am also always willing to answer questions about material or assignments, so **please ask**.
- You can send me email or schedule an appointment to come in to my office.
- I check and respond to my e-mail regularly. However, I will not respond to e-mails on Friday evenings or Saturdays; please plan accordingly.

## Arts and Sciences Distance Learning Course Component Technical Review Checklist

**Course:** Linguistics 2001

**Instructor:** TBA

**Summary:** Online Course

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/recommendations
6.1 The tools used in the course support the learning objectives and competencies.	✓			<p>All tools used in this course align to support the course learning objectives. This course and all content will be delivered through Carmen and Carmen Connect.</p> <ul style="list-style-type: none"> <li>• Students comprehend mathematical concepts and methods adequate to construct valid arguments</li> <li>• Understand inductive and deductive reasoning</li> <li>• Increase general problem solving skills</li> <li>• Emphasis on first order logic</li> </ul>
6.2 Course tools promote learner engagement and active learning.	✓			<p>Students will engage with the course materials and instructor on a weekly basis in the following ways to promote active learning. All course materials or links to all materials will be in Carmen.</p> <ul style="list-style-type: none"> <li>• Quick check activities within Carmen to reinforce understanding of course materials from readings and videos</li> <li>• Group activities that will take place during the synchronous hours of the online course</li> <li>• Weekly topic based readings</li> <li>• Weekly written homework assignments</li> <li>• Weekly synchronous online office hours with the Instructor (one hour)</li> <li>• Weekly synchronous drop-in in-person office hours (two hours)</li> <li>• A total of three problem set projects with each project assigned every three weeks</li> </ul>
6.3 Technologies required in the course are readily obtainable.	✓			<p>All technology platforms being used for this course are readily obtainable buy students.</p> <ul style="list-style-type: none"> <li>• Carmen</li> <li>• Carmen Connect</li> </ul>

6.4 The course technologies are current.	✓			All technology platforms being used for this course are current. Carmen and Carmen Connect are a part of the core common tool set offered by the university.
6.5 Links are provided to privacy policies for all external tools required in the course.	✓			There are no external tools being used for this course.
<b>Standard - Learner Support</b>				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	✓			Links to the available technical support for the following tools have been provided in the course syllabus. <ul style="list-style-type: none"> <li>• Carmen</li> <li>• Carmen Connect</li> </ul>
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	✓			<p><b>The below link should be included in the syllabus. The text for the accessibility statement should be in BOLD 18pt font.</b></p> <p><b><a href="http://www.ods.ohio-state.edu">http://www.ods.ohio-state.edu</a></b></p> <p>Recommend that the font size be set to 18pt font for this statement in the syllabus.</p>
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	✓			The faculty member should add to the syllabus an overview and contact information for the student academic services offered on the OSU main campus. <a href="http://artsandsciences.osu.edu/academics/current-students">http://artsandsciences.osu.edu/academics/current-students</a>
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	✓			The faculty member should add to the syllabus an overview and contact information for student services offered on the OSU main campus. <a href="http://ssc.osu.edu">http://ssc.osu.edu</a>



				Recommend that this link be included in the "Other Course Policies" section of the syllabus.
<b>Standard – Accessibility and Usability</b>				
8.1 Course navigation facilitates ease of use.	✓			Recommend using the Carmen Distance Learning Course Shell to provide a consistent student-user experience in terms of navigation and access to content.
8.2 Information is provided about the accessibility of all technologies required in the course.	✓			The OSU core common tool set used in this course meets the universities policies for accessibility.
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	✓			Recommend that resources be developed to address any requests for alternative means of access to course materials. These resources should be in formats that meet the needs of diverse learners.
8.4 The course design facilitates readability	✓			Recommend using the Carmen Distance Learning Course Shell to provide a consistent student-user experience in terms of navigation and access to content.
8.5 Course multimedia facilitate ease of use.	✓			All assignments and activities that use the OSU core common tool set at Ohio State facilitate ease of use with embedded multimedia.

**Reviewer Information**

- Date Reviewed: 4/28/16
- Reviewed By: Mike Kaylor