

# INTRODUCTION TO SYMBOLIC LOGIC

PHIL012 • Summer 2012 • MTWRF 12.45–2 • 217 Thomas

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## COURSE DESCRIPTION

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This is an introductory course in symbolic logic. *Logic* is the science of correct reasoning. *Symbolic logic* is a particular branch of logic that studies correct reasoning using a formal or artificial language. This course will articulate two different formal languages: propositional logic and predicate logic. In both languages, we will examine how these artificial language relate to English (a natural language), different ways in which formal languages can be used to determine whether arguments are valid (or invalid), and how to reason using these languages.

## COURSE OVERVIEW

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### REQUIRED TEXTS

1. Agler, David W. *An introduction to Symbolic Logic: Syntax, Semantics, and Proof*. Check course website for further details (available at the [Student Book Store](#)).

### COURSE OBJECTIVES

- **Critical Reading Skills:** Students will learn certain fundamental features of language and argument analysis, which will allow them to critically analyze texts, identify arguments, and discriminate superfluous information from key points.
- **Critical Thinking:** Students will develop a general set of skills that allow them to analyze and assess a variety of different arguments, deciding whether the arguments are properly supported, fallacious, or valid.
- **Dialogue:** Students will engage in respectful conversation with classmates.
- **Oral Expression:** Students will learn how to clearly articulate various arguments and critical thinking concepts.

### COURSE WORK

- **Five Exams (15% each):** The course will have four exams throughout the semester. A study guide, rubric, and practice exam will be made available before each exam. It is strongly advised that you take the practice exam to prepare for each exam.
- **Five Examinations of Notebooks (5% each):** While you are not required to specifically keep a notebook, you are required to keep an organized set of your work. This will be collected at specified times in the semester and reviewed mostly for *completeness*. In order to receive full points, it is not necessary that you (1) did all the exercises correctly, nor (2) that you did 100% of the exercises. A helpful guideline concerning *organization and assessment* of these notebooks will be distributed in class. The specific problem set will also be announced at the beginning of each class.
- **Extra Credit Activities:** There are a number of different ways that you can gain extra credit in this course. For example, (1) you can win one of the many Proof Competitions (details TBA), (2) show how logic has practical application by building an electric switching circuit (ask for details), (3) be a regular poster to the PHIL012 Yammer Page (see <https://www.yammer.com/> and search for “PHIL012”).

### MAJOR ASSIGNMENTS

<i>Assignment</i>	<i>Percentage of Final Grade</i>	<i>Due Dates</i>
Exam 1	15	May 18
Exam 2	15	May 25
Exam 3	15	June 8
Exam 4	15	June 15

Exam 5	15	June 22
Notebook 1	5	May 18
Notebook 2	5	May 25
Notebook 3	5	June 8
Notebook 4	5	June 15
Notebook 5	5	June 22

## COURSE SCHEDULE

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May 14–May 18	Introduction Chapter 1: Propositions, Arguments, and Logical Properties Chapter 2: Language, Syntax, and Semantics <b>Due:</b> Logic Notebook 1, Exam 1 (May 18)
May 21–May 25	Chapter 3: Truth Tables Chapter 4: Truth Trees <b>Due:</b> Logic Notebook 2, Exam 2 (May 25)  <i>May 28<sup>th</sup> – Memorial Day, No Class</i>
May 28–June 8	Chapter 5: Propositional Logic Derivations <b>Due:</b> Logic Notebook 3, Exam 3 (June 8)
June 11–June 15	Chapter 6: Predicate Language, Syntax, and Semantics Chapter 7: Predicate Logic Trees <b>Due:</b> Logic Notebook 4, Exam 4 (June 15)
June 18–June 22	Chapter 8: Predicate Logic Derivations <b>Due:</b> Logic Notebook 5, Exam 5 (June 22)

## COURSE POLICIES

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### ACADEMIC MISCONDUCT

The general principles and policy relating to cheating and plagiarism, which are enforced in this class, can be found in the Penn State policy on academic misconduct. *Academic Integrity*: Academic dishonesty encompasses a wide range of activities, whether intentional or unintentional, that includes, but is not limited to: all forms of fraud, plagiarism, and any failure to cite explicitly all materials and sources used in one's work. Sanctions for these activities include, but are not limited to, failure in a course, removal from the degree program, failure in a course with an explanation in the permanent transcript of the cause for failure, suspension, and expulsion. If you are unclear about whether you or someone you know is engaging in academic misconduct, read the following: [University Statement on Academic Integrity](#). For more information, see [PSU Academic Integrity](#), [PSU ITS](#), [Plagiarism Tutor](#), [Turnitin](#), [PSU Teaching & Learning with Technology](#)

### GRADE ROUNDING

Grades will be rounded up from the *second* decimal point, e.g. 90.95 rounds up to 91.0 while 90.94 rounds down to 90.90. In the event that eLION does not allow for a particular grade (e.g. D+), you will simply be given the letter grade (e.g. if you have a D+ then you will receive a D, and if you have a C–, you will receive a C).

A: 91–100%;	C+: 79.0–79.9	F: 0–59.9
A–: 90.0–90.9	C: 71.0–78.9	<a href="#">INCOMPLETE</a>
B+: 89.0–89.9	C–: 70–70.9	<a href="#">DROP</a>
B: 81.0–88.9	D+: 69.0–69.9	

B-: 80–80.9      D: 60.0–68.9

### **LATE WORK**

If you are planning on taking a **Test/Notebook** late, you will need to clear this with the instructor *before* the day and time of the test. If the instructor is not informed that you will be taking the test late, a grade reduction of one letter grade is incurred for every day the test is late. So if the due date is Tuesday at 3p.m. and you email me on Tuesday at 3.01p.m., you will lose a letter grade. You will not lose an additional letter grade until 3.01p.m. the next day (i.e. Wednesday).

### **STUDENT GUIDANCE AND DISABILITY**

If you have a documented disability and wish to receive academic accommodations, please contact the campus disability liaison as soon as possible: (name, office, telephone, email). For additional information, check the university web site for [Disability Services](#). If you are in need of psychological counseling, please do not hesitate to contact Penn State's [Counseling & Psychological Services](#) (phone: 814-863-0395). For any problem related to your studies, university policies and procedures, do not hesitate to seek the help of the [Student Affairs Services](#), your Academic Advisor, or arrange a meeting with your instructor who will help you obtain assistance through one of the above, or another, agency.

### **USE OF ANGEL AND EMAIL COMMUNICATION**

Please check the webpage on the [ANGEL](#) website regularly. An online version of the syllabus is available there, and you will be notified of any cancellation of a course meeting there. If you need to contact me, send a well-constructed email to [dwa132@psu.edu](mailto:dwa132@psu.edu) with an appropriate subject line (e.g. P120 Question) and with an appropriate address (e.g. "Dear David"). Failure to do either, or emailing me with multiple links attached ("check this youtube link") will result in your instructor deleting your email. Students are responsible for activity on their computer accounts so only send emails pertinent to the course. Also, please do not send correspondence from cellular telephones (e.g. Blackberries, etc.).

### **TUTORING, DROP PROCEDURES, AND INCOMPLETES**

Through the course of the semester, you may decide you need additional tutoring. There are two ways to receive additional assistance in this course. The first is to request a private tutor through [Penn State Learning](#). At their website, go to the "Resources" page, and click "Engage a Private Tutor" to request a tutor for this course. Students who simply stop attending class, for whatever reason, without officially withdrawing from the course, will receive the grade of F. If you expect a refund, be aware that the date the withdrawal form is processed by Penn State registrar's office determines the amount of refund. Consult the Register site for [drop procedures](#). Consult the Handbook for taking an [Incomplete \(D/F\)](#). Before considering dropping the course or taking an incomplete, you might consider getting additional help: [Information Literacy Tutorial](#), [University Learning Center](#), [Writing Center](#)

### **CLASSROOM ENVIRONMENT**

A number of factors figure into creating a healthy classroom environment. In order to facilitate such an environment, I ask you to obey the following: (1) the use of cell phones in any capacity is prohibited (please turn ringers/buzzers off, no text-messaging during class), (2) please do not begin to 'pack up' your belongings before your instructor has *explicitly* dismissed you, (3) please come to class rested, sleeping in class is strictly prohibited, (4) please do not do other work in class. If you are incapable of performing (1)–(4) or are disruptive in class, you will kindly be asked to leave the classroom.

### **CHALLENGE EXAMINATION**

For some courses, students may request a [challenge examination](#) as a substitute for completing the usual requirements of a course. If the examination is successfully completed the credits received are described as "credits by examination" ([policy 42-50](#)).

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