

Introduction to Logic

(730:201:01, Summer 2019)

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Course Description: Introduction to formal logic, covering truth functional propositional logic and quantification theory. Emphasis on developing symbolic techniques for representing and evaluating arguments.

SAS Core Code: Mathematical or Formal Reasoning (QR)

This course is an introduction to using formal logic to evaluate language and reasoning. It will also give you the tools to evaluate the quality of arguments. This course satisfies Core Curriculum Goals: Formulate, evaluate, and communicate conclusions and inferences from quantitative information, and to apply effective and efficient mathematical or other formal processes to reason and to solve problems.

A note about the course: This is a relatively technical course in philosophical logic. Success in the course requires that you be comfortable using the logical tools you learn. Doing so requires not just reading the material and watching the video lectures, but also doing a lot of practice problems. To this end, there are a number of assignments and quizzes. I also *highly* recommend doing other practice problems from the text throughout the course.

Like in a math course, later material will build on tools and skills you learn earlier in the course. Additionally, some students find the material particularly challenging in an online format. For these reasons, don't hesitate to ask for additional help with the material, including questions about how to do the problems. I am always happy to answer.

Required Textbook: Ernest Lepore (2013) *Meaning and Argument: An Introduction to Logic Through Language*. Revised 2nd edition. The textbook is available in kindle or paperback versions.

Sakai: All course material will appear on Sakai and all your course work will be submitted through Sakai. Additionally, I will be using Sakai to send you information about the course through email. Make sure to go to the **My Workspace** section of Sakai, then to **My Profile**, then to **Contact Information**, and make sure the email listed there is one that you check on a regular basis.

Below are the details of the course policies and an outline of the course, including a list (subject to change) of the course readings on a suggested and due dates for assignments and quizzes. **You are responsible for knowing the contents of this syllabus.**

Week 1

(05.28):

Reading: *Meaning and Argument*, Ch. 1 & 2

Lesson 1: Arguments; Validity; Soundness

Assignment 1: Due Friday, May 31st by 11:55pm

Week 2

(06.03):

Reading: *Meaning and Argument*, Ch 3-5

Lesson 2: Symbolizing negation & conjunction in Propositional Logic, Truth Tables

Quiz 1 (by Wednesday, June 5th at 11:55pm)

Assignment 2: Due Wednesday, June 5th by 11:55pm

(06.05):

Reading: *Meaning and Argument*, Ch 6-7

Lesson 3: Symbolizing disjunction & conditionals in Propositional Logic,

Quiz 2 (by Friday, June 7th at 11:55pm)

Assignment 3: Due Friday, June 7th by 11:55pm

Week 3

(06.10):

Reading: *Meaning and Argument*, Ch 8

Lesson 4: Truth trees for evaluating arguments in Propositional Logic

Quiz 3 (by Wednesday, June 12th at 11:55pm)

Assignment 4: Due Wednesday, June 12th by 11:55pm

(06.12):

Reading: *Meaning and Argument*, Ch 9

Lesson 5: Symbolizing sentences in Property Predicate Logic

Quiz 4 (by Friday, June 14th at 11:55pm)

Assignment 5: Due Friday, June 14th by 11:55pm

Week 4

(06.17):

Reading: *Meaning and Argument*, Ch 10 & 11

Lesson 6: Extending truth trees to evaluate arguments in Property Predicate Logic,
Refining symbolization of sentences into Property Predicate Logic

Quiz 5 (by Wednesday, June 19th at 11:55pm)

Assignment 6: Due Wednesday, June 19th by 11:55pm

(06.19):

Reading: *Meaning and Argument*, Ch 12

Lesson 7: Symbolizing sentences in Relational Predicate Logic

Quiz 6 (by Friday, June 21st at 11:55pm)

Assignment 7: Due Friday, June 21st by 11:55pm

Week 5

(06.24):

Reading: *Meaning and Argument*, Ch 13

Lesson 8: Extending Relational Predicate Logic to include nested quantifiers

Quiz 7 (by Wednesday, June 26th at 11:55pm)

Assignment 8: Due Wednesday, June 26th by 11:55pm

(06.26):

Reading: *Meaning and Argument*, Ch 14

Lesson 9: Extending truth trees to evaluate arguments in Relational Predicate Logic

Quiz 8 (by Friday, June 28th at 11:55pm)

Assignment 9: Due Friday, June 28th by 11:55pm

Week 6

(07.01):

Reading: *Meaning and Argument*, Ch 15

Lesson 10: Refining symbolization of sentences into Relational Predicate Logic

Quiz 9 (by Wednesday, June 3rd at 11:55pm)

Assignment 10: Due Wednesday, June 3rd by 11:55pm

(07.03):

Reading: *Meaning and Argument*, Ch 16

Lesson 11: Extending Relational Predicate Logic to include identity

Quiz 10 (by Friday, July 5th at 11:55pm - but recommend completing before the exam)

(07.05): **Final Exam** (tentatively 10am-1pm, Rutgers New Brunswick; exact location TBA)

Readings:

All readings are from the textbook. Students are expected to have read the papers or other materials before the lesson. The text is quite technical, but you will get more out of the lessons if you are already familiar with the material. The lessons, then, will clarify the material and deepen your understanding.

Lessons:

The (mostly video-based) lessons will take the place of course lectures. They will include a combination of discussion of relevant logic concepts, introductions to the tools of philosophical logic, and many demonstrations of relevant examples. The material will come from video lectures and written notes. They will be designed to enhance your understanding of the text and to equip you to do any relevant problems. Lessons will be posted before the day of their suggested completion listed on the syllabus and several days before the related assignment is due.

Grading:

Ten assignments, 5% each: 50%

Ten quizzes, 1% each: 10%

Ten forum discussion contributions, 1% each: 10%

Final exam: 30%

Assignments:

The nature of assignments will be slightly varied, though all will require you to show your ability to use the concepts and tools you learn throughout the course. They will mostly consist of a number of problems or exercises. The goal is to get you to demonstrate your understanding of material introduced in the lessons and to get practice using the relevant techniques.

All assignments must be submitted electronically through the **Assignments** section on Sakai. You may either type your assignment or submit a scan of a handwritten document. All submissions must be in **pdf** form, however. This is so any symbols you use appear the same to me.

Do not include your name at the top of the assignment. Sakai will automatically associate your work with you. **All work will be graded anonymously.** This means that you should not include your name, student number, NetID, or any other identifying mark on the front page of your assignments or in the document name when you submit them. Blind grading is to your benefit - it makes it impossible for any inadvertent biases to come into play when evaluating your work, so what gets judged is purely the quality of what you have submitted.

Discussion forum posts:

For each lesson, I will post a corresponding topic section on the forum. Ten times throughout the course (essentially once per lesson, and *not for credit more than twice per topic*), you must post a question about the text or lesson material. You are also permitted to post more with further questions.

Forum posts will be graded on the following scale

Complete: 10 points

Incomplete: 5 points

Not submitted: 0 points

A complete score will be given to specific, detailed clear questions about a concept or problem *or* to an answer that fully and clearly addresses a previously posted question. An incomplete score will be given to vague questions or ones that show limited familiarity with the material. The idea is for you to help or get help from each other, though I will also answer any unanswered questions or add clarity to a discussion.

Everyone is encouraged to ask questions about the material. In addition, your participation in the forums *may* be favourably taken into account if your grade is on the borderline. I also welcome you to email me with questions or thoughts about the material or to visit me in office hours.

Quizzes:

Every lesson except the first will have an associated quiz worth 10 points. They will be five to ten questions on the material you just covered. The questions will be true-false, multiple choice, or require an answer of a couple of words. However, they may require that you do a problem yourself (e.g. a proof for which you do not submit the work).

Late work:

The equivalent of ten percentage points will be taken off for each day an assignment is late. Except under extraordinary circumstances, there will be no make-ups for the final exam.

Final exam:

The final exam will take place **in-person** at the Rutgers New Brunswick Campus at 10am on June 5th. It will be in the model of the problem sets and must be completed without notes or the text.

For those who are unable to make it to campus, you must contact me as soon as possible and explain your circumstances so that we can make other arrangements. You must be available to take the exam on June 5th before 5pm EST. The exam will be different from

that given to other students: either you can take the exam over a video service like Skype (which will be a partially oral exam) or, using the service ProctorTrack. I strongly discourage opting for these options unless absolutely necessary.

Accommodations:

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please let me know if you require any special accommodations as early in the course as possible—I am more than happy to be flexible! To begin the formal process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.