Introduction to Logic (730:201:H1 - Summer 2020)

Instructor: Danny Forman

Office hours: Friday 1:00pm - 3:00pm EST; over Skype by arrangement
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Course Website: http://sakai.rutgers.edu; site: Introduction to Logic S20

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.

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 attending virtual classes, but also doing a lot of practice problems. To this end, there are a number of assignments and exams. 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.

In general, this material will come more quickly to some than others. Please be respectful of your classmates! The best way to learn logic is to really dig into what feels least comfortable or familiar, or to explain concepts in the clearest terms you can muster. These two approaches are complimentary. No matter how easy or difficult you find the material, helping each other is always going to be conducive to everyone's learning.

Required Textbook: *forall x: calgary*. Spring 2020. P. D. Magnus and Tim Button and J. Robert Loftis and Aaron Thomas-Bolduc and Richard Zach.

The textbook is free and opensource (hooray!), and a PDF is available for download here: http://forallx.openlogicproject.org/forallxyyc.pdf.

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 exams. You are responsible for knowing the contents of this syllabus.

Readings: All readings are from the textbook. Students are expected to have read the 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: Lesson will take place online in real time via the (all-too-familiar) videoconferencing software **WebEx**. While I will make an effort to record and post lessons, **attendance is mandatory**. Critically, **each session will run 1:00pm – 2:30pm EST**. Invitations to each session will be sent out the day of. Lessons will include a combination of discussion of relevant logic concepts, introductions to the tools of philosophical logic, and many demonstrations of relevant examples. Lesson will be geared at enhancing your understanding of the text and equipping you to do relevant problems several days before the related assignment is due.

Grading:

Attendance/Participation: 10%
Four assignments: 40% (*10% each*)
Midterm: 25%
Final Exam: 25%

Attendance/Participation: This is a somewhat discretionary category. You will be expected to show up for our WebEx sessions, and missing sessions will count against this portion of your grade. Additionally, you'll be expected to make a good faith effort to participate, by asking or discussing questions, in class, on our course Sakai forum, or via personal email. Needless to say, everyone is encouraged to ask questions about the material, but I also understand that some folks are uncomfortable asking questions publicly - I welcome you to email me with questions or thoughts about the material or to "visit me" during office hours.

Assignments: Assignments **must be submitted by 9pm** on the relevant day they are due. 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 from the chapter covered during the relevant week. 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.

Final Exam and **Midterm**: The Midterm and Final Exam will both be cumulative – consisting of question on the topics we have covered up to that point in the course. The lesson before each of the two exams will be devoted to reviewing relevant material and going over any questions. Each exam **must be taken before 9pm** on the relevant day they are due using the service ProctorTrack. I'll go over more relevant details closer to the exam date itself.

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.

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.

Week 1

(Mon 07/06): *Lesson 1*: introductions, logical notions

Reading: *forall x: calgary*, Ch. 1-3 (pp. 1-26)

(Weds 07/08) *Lesson 2*: truth-functional logic

Reading: *forall x: calgary*, Ch. 4-7 (pp. 27-62)

(Fri 07/10) *Assignment 1*:

Week 2

(Mon 07/13) *Lesson 3*: review assignment, truth tables

Reading: *forall x: calgary*, Ch. 8-13 (pp. 63-101)

(Weds 07/15) *Lesson 4*: natural deduction for TFL part 1

Reading: *forall x: calgary*, Ch. 14-16 (pp. 102-154)

(Fri 07/17) *Assignment 2*:

Week 3

(Mon 07/20) *Lesson 5*: review assignment, natural deduction for TFL part 2

Reading: *forall x: calgary*, Ch. 17-20 (pp. 155-183)

(Weds 07/22) *MIDTERM REVIEW*

(Fri 07/24) ***Midterm***

Week 4

(Mon 07/27) *Lesson 7*: midterm review, FOL part 1

Reading: *forall x: calgary*, Ch. 21-23 (pp. 184-221)

(Weds 07/29) *Lesson 8*: FOL part 2

Reading: *forall x: calgary*, Ch. 22-26 (pp. 222-242)

(Fri 07/31) *Assignment 3*

Week 5

(Mon 08/03) *Lesson 9*: review assignment 3, interpretations

Reading: *forall x: calgary*, Ch. 27-31 (pp. 243-274)

(Weds 08/05) *Lesson 10*: natural deduction for FOL

Reading: *forall x: calgary*, Ch. 32-37 (pp. 275-312)

(Fri 08/07) *Assignment 4*

Week 6

(Mon 08/10) *FINAL REVIEW*

(Weds 08/12) ***Final Exam***