Course Syllabus

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Office hrs: MWF 10:40 – 11:50 and by appointment – or try me anytime I am in (sometimes in the Logic Lab, UH 052 x12667)

Brief Description

You have, presumably, already been introduced to formal logic, where logic and logical validity have been taken simply as given. But there are other logics, and so the question how to choose among them. And given a logic, one may wonder about grounds for mathematics. We shall begin with a brief examination of the nature and grounds of logical validity. We then turn to an examination of mathematics, including historical accounts, and contemporary theories including logicism, formalism, platonism, fictionalism and structuralism. Ours is not a course in logic or mathematics! Rather we shall think about the grounds of these disciplines, and so about the very grounds of what may seem itself fundamental to science and thought more generally.

Course Expectations

In addition to the standard GE prerequisites for upper division philosophy, this course has Phil 200 and Math 110 (or consent of instructor) as prerequisites. Thus we do not assume any sophisticated content in logic or mathematics – but rather a basic familiarity with “what it is like” to work problems in logic and mathematics. In a small and advanced class such as this, it goes without saying that each of us specially depends upon the others for the quality and nature of class interaction. So I’ll leave off comments about homework, attendance, phones and the like to simply depend on your honor and good judgement.

Texts

Readings are from Shapiro, Thinking About Mathematics, and Benacerraf & Putnam eds., Philosophy of Mathematics: Selected Readings 2nd edition, each available in the Bookstore. Additional readings will be provided in xerox form.
Grading

Grades are based on homework (15%), midterm exam (20%), final exam (25%), and paper project (40%).

a) Homework consists of 2-3 page reaction papers corresponding to different units in the course. These will normally consist of a summary of some issues from reading, and develop a question or critique. These papers will be graded on a 0 – 5 point scale, with scores of 4 – 5 reserved for ones that generate a significant question or critique, and lower for papers that remain at the level of summary. Each assignment is of equal weight, though the lowest grade will be dropped. Late assignments will be accepted only at a one-point deduction.

b) The midterm and final are comprehensive take-home essay exams of material from lecture and reading. The final will be due at the regular exam period (W 12/7).

c) There are two options for the paper project

(i) You may choose to do two short (5-6 page) papers on topics to be assigned in class. These topics will be closely related to lecture and reading; no outside reading will be required. Each paper will be worth 20% of the total grade. For each there will be the opportunity to rewrite; if this option is chosen, the first draft will count for 5% of the total grade, and the second 15%.

(ii) You may choose to write a single (10-12 page) paper. Any such paper should have as its focus some topic grounded in our syllabus or texts – though it might go beyond those sources. The paper is due in four installments – to coincide with the 4 due dates of option (i): first, a brief (1-2 page) statement of the topic you will consider, along with a projected thesis statement and a projected bibliography; second a 5 page start to your paper, in which you set up the issues to be discussed; third, a version of your complete paper; and fourth, the final version. The first part must be approved before other drafts will be accepted. After that, the drafts count 5%, 5%, and 30% of the total grade. On this option, it will be wise to discuss your topic with Prof Roy as it is being formulated.

Late papers will be accepted up to the last day of instruction with a 5% deduction and up to the final exam with a 10% deduction. Nothing will be accepted after the final exam. Exceptions require some exceptional circumstance (not “I have had a lot to do” – more like “I got run over by a truck and was in traction”) and prior approval.
**Grading Notes**

All grading is numerical. Grades are not curved. Given your weighted total score, you may expect to receive at least the grade associated with the usual scale: \( \geq 90 \) for an ‘A’, \( \geq 80 \) for a ‘B’, etc.

You are encouraged to discuss anything, especially reading and homework with other students, the instructor and/or assistants in the Logic Lab. With this said, all written work, especially papers and exams, is to be your own. Academic honesty is always essential, and particularly so in the give-and-take of philosophy, where the *project* is to work through and clarify your own views. Plagiarism will result in standard University discipline and up to an ‘F’ for the course. If you have any questions or concerns about plagiarism, please talk things over with Prof Roy. See also “What is Plagiarism?” linked from [http://philosophy.csusb.edu/~troy/courses.htm](http://philosophy.csusb.edu/~troy/courses.htm) and the CSUSB policy document [http://academic-affairs.csusb.edu//personnel/fam/fam820.htm](http://academic-affairs.csusb.edu//personnel/fam/fam820.htm).

**Details**

There are no adds after the census date. If you are in need of an accommodation for a disability in order to participate in this class, please let me know as soon as possible and also contact Services to Students with Disabilities (UH 183, 537-5238). Everyone should receive messages from their CSUSB e-mail. An easy way to do this is to set it up to forward to your regular address.
Schedule of Instruction (highly tentative)

Introductory Philosophy of Logic
Modal logic and semantics
   Roy, from “Natural Derivations for Priest”*
   Roy, from “Making Sense of Relevant Semantics”*

Philosophy of Mathematics
A) Background
   1. General
      Shapiro, Chapter 1, 2
   2. Historical
      Shapiro, Chapter 3, 4

B) Classic Positions
   1. Logicism
      Shapiro, Chapter 5
      Russell, from Introduction to Mathematical Philosophy
      Frege, “The concept of number”

   2. Intuitionism(??)
      Shapiro, Chapter 6
      Heyting, “Disputation”
      Dummett, “The philosophical basis of intuitionistic logic”

   3. Formalism
      Shapiro, Chapter 7
      Hilbert, “On the infinite”
      Von Neumann “The formalist foundations of mathematics”
      Curry, “Remarks on the definition and nature of math”

C) Contemporary Views
   1. Platonist indispensability
      Shapiro, Chapter 8
      Putnam, from Philosophy of Logic*
      Benacerraf, “Mathematical truth”

   2. Fictionalist nominalism
      Shapiro, Chapter 9
      Field, “Realism and anti-realism about mathematics”*

   3. Varieties of structuralism
      Shapiro, Chapter 10
      Benacerraf, “What numbers could not be”
      Parsons, “The structuralist view of mathematical objects”*

*On handout