Philosophy 405: Knowledge, Truth and Mathematics   Hamilton College
Spring 2008   Russell Marcus
M, W: 1-2:15pm   rmarcus1@hamilton.edu

Schedule

Class 1: What is mathematics? What is philosophy of mathematics? (1/21)
        Readings:
                Brown, Chapter 1
                Shapiro, pp 21-29

Class 2: Pythagoras and the Pythagoreans (1/23)
        Primary Readings
                Kline, "The Creation of Classical Greek Mathematics"
                Kline, "The Greek Rationalization of Nature"

Class 3: Plato's Platonism (1/28)
        Seminar Paper 1: Jazmine
        Seminar Paper 2: Jonathan
        Primary Readings
                Selections from Plato on Mathematics
        Secondary Readings
                Shapiro, pp 49-63
                Brown, Chapter 2

Class 4: Aristotle (1/30)
        Seminar Paper 1: Nelson
        Seminar Paper 2: Walter
        Primary Reading
                Aristotle, "Books XIII and XIV"
        Secondary Reading
                Shapiro, pp 63-71

Class 5: Modern rationalism I (2/4)
        Seminar Paper: Sarah
        Primary Readings
                Descartes, "Third Meditation"
                Descartes, "Fifth Meditation"
                Leibniz, "Meditations on Knowledge, Truth, and Ideas"
        Secondary Readings
                Kline, "The Mathematization of Science"
                Kline, "The Creation of the Calculus"

Class 6: Modern rationalism II (2/6)
        Seminar Paper: Kara
        Primary Readings
                Locke, *Essay*, Bk 1, Ch. 1
                Leibniz, Selections from *New Essays*

Class 7: Modern empiricism (2/11)
      Seminar Paper 1: James
      Seminar Paper 2: Katherine
      Primary Readings
            Selections from Berkeley's *Principles*
            Selections from Hume on Mathematics

Class 8: The synthetic a priori I (2/13)
      Seminar Paper: Nelson
      Primary Readings
            Selections from Kant's *Critique*
            Kant, *Prolegomena*, §§1-2
      Secondary Reading
            Shapiro, pp 76-91

Class 9: The synthetic a priori II (2/18)
      Seminar Paper: Heather
      Readings
            See Readings for Class 8

Class 10: Radical empiricism (2/20)
      Seminar Paper: Jonathan
      Primary Readings
            Mill, System of Logic, Book II, §V and §VI
            Frege, Foundations of Arithmetic, §7-§10
      Secondary Readings
            Shapiro, pp 91-102

Class 11: Cantor's Paradise (2/25)
      Seminar Paper: Walter
      Primary Reading
            Tiles, "Cantor's Transfinite Paradise"
      Secondary Readings
            Dauben, "Cantor's Philosophy of the Infinite"
            Tiles, "Numbering the Continuum"

Class 12: Logicism (2/27)
      Seminar Paper: Kara
      Primary Readings
            Frege, from *The Foundations of Arithmetic*, II
            Russell, "Letter to Frege"
            Frege, "Letter to Russell"
      Secondary Readings
            Russell, "On Our Knowledge of General Principles"
            Russell, "How *A Priori* Knowledge is Possible"
            Shapiro, pp 107-115

Class 13: Formalism (3/3)
>Seminar Paper: Matt
>Primary Readings
>>Hilbert, "On the Infinite"
>Secondary Readings
>>Brown, pp 62-71
>>Shapiro, pp 140-165

Class 14: Incompleteness (3/5)
>Seminar Paper: James
>Primary Readings
>>Johann von Neumann, "The Formalist Foundations of Mathematics"
>>Smullyan, "The General Idea Behind Gödel's Proof"
>Secondary Readings
>>Shapiro, pp 165-168

Class 15: Intuitionism (3/10)
>Seminar Paper: Katherine
>Primary Readings
>>Heyting, "Disputation"
>>Brouwer, "Intuitionism and Formalism"
>>Brouwer, "Consciousness, Philosophy, and Mathematics"
>Secondary Readings
>>Brown, Chapter 8
>>Shapiro, pp 172-189

Class 16: Carnap (3/12)
>Seminar Paper: Heather
>Primary Readings
>>Carnap, "Empiricism, Semantics and Ontology"
>Secondary Reading
>>Shapiro, pp 124-133

Class 17: Wittgenstein's Conventionalism (3/31)
>Seminar Paper: Matt
>Primary Readings
>>Wittgenstein, Selections from *Remarks on the Foundations of Mathematics*
>Secondary Reading
>>Brown, Chapter 9

Class 18: Wittgenstein's Conventionalism (4/2)
>Seminar Paper: Jazmine
>Primary Readings
>>See Class 17, plus...
>>Ayer, "The A Priori"

Class 19: Gödel platonism (4/7)
        Seminar Paper: Sarah
        Primary Reading
                Gödel, "What is Cantor's Continuum Problem? (1964)"
        Secondary Readings
                Shapiro, pp 201-212
                Feferman, et al., "Introductory Note..."
                Gödel, "What is Cantor's Continuum Problem? (1947)

Class 20: The Problem (4/9)
        Seminar Paper:
        Primary Readings
                Benacerraf, "Mathematical Truth"
                Field, "Knowledge of Mathematical Entities"
        Secondary Reading
                Shapiro, pp 29-39

Class 21: Quine I (4/14)
        Seminar Paper:
        Primary Readings
                Quine, "Existence and Quantification"
                Quine, "On What There Is"
        Secondary Readings
                Shapiro, pp 212-220
                Quine, "Two Dogmas of Empiricism"
                Grice and Strawson, "In Defense of a Dogma"

Class 22: Quine II (4/16)
        Seminar Paper:
        Primary Readings
                Marcus, "Quine's Indispensability Argument"
                Marcus, "Problems with Quine's Indispensability Argument"

Class 23: Structuralism I (4/21)
        Seminar Paper:
        Primary Reading
                Benacerraf, "What Numbers Could Not Be"
        Secondary Reading
                Shapiro, pp 257-275

Class 24: Structuralism II (4/23)
        Seminar Paper:
        Primary Reading
                Shapiro, "Structure"
        Secondary Reading
                Shapiro, pp 275-289

Class 25: Fictionalism (4/28)
  Seminar Paper:
  Primary Reading
    Field, "Introduction: Fictionalism, Epistemology, and Modality"
  Secondary Reading
    Shapiro, pp 226-237

Class 26: Contemporary Platonism (4/30)
  Seminar Paper 1:
  Seminar Paper 2:
  Primary Readings
    Katz, "Conclusion: The Problems of Philosophy"
    Katz, "The Epistemic Challenge to Realism"
    Katz, "Toward a Realistic Rationalism"
    Balaguer, "A New Platonist Epistemology"

Class 27: Modalism (5/5)
  Seminar Paper 1:
  Seminar Paper 2:
  Primary Readings
    Putnam, "Mathematics without Foundations"
    Chihara, "The Constructibility Theory"
  Secondary Readings
    Shapiro, pp 237-243

Class 28: Computer Proofs (5/7)
  Seminar Paper:
  Primary Readings
    Thomas Tymoczko, "The Four-Color Theorem and its Philosophical Significance."
  Secondary Readings
    Brown, pp 154-158

Epitaph: Hilary Putnam, "Philosophy of Mathematics: Why Nothing Works"