730 Philosophy 101, Sect 01   Logic, Reason and Persuasion

This course meets the following goal: Examine critically philosophical and other theoretical issues concerning the nature of reality, value, knowledge, human experience.

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Office Hours: By Appointment

I. Elements of Set Theory (weeks 1, 2 and 3)

Denumerable and Non-denumerable Sets; The Paradoxes and Axiomatic Set Theory.

Course Notes: Elements of Set Theory.

II. Linear and Partial Orderings (weeks 3 and 4)

Linear Orderings; Partial Orderings.
Limits and Bounds; Least Upper and Greatest Lower Bounds.
Transfinite Order Types, Ordinals and Cardinals.

Course Notes: Linear and Partial Orderings.

III. Elements of Truth-Functional Propositional Logic (weeks 5 and 6)

Symbolism and Logical Form; The Logical Constants.
Semantic Consistency, Contingency, and Validity; Spaces of Assignments. Logical Implication.

Course Notes: Truth Functional Propositional Logic. Schaum's pps. 44-68

IV. Elements of Quantification (weeks 6 and 7)

'All' and 'There exists' — The universal and existential quantifiers.
Free and Bound variables; Open and Closed Formulæ (Sentences).
Interpretations and Models.
Logical Strength: States of Affairs and Relative Determinateness.

Course Notes: Quantification Logic. Schaum's ch. 5; ch. 6 pps. 130-149; ch. 9 pps. 223-226

Midterm

V. Fallacies (week 8)

Arguments from Pervasiveness of Belief.
Arguments from Absence of Information.

Schaum's ch. 8

VI. Probability and Statistics (weeks 8-10)

Elements of Axiomatic Probability.
Conditional Probabilities, *a priori* vs. *a posteriori* probabilities; Bayes' Theorem; probabilistic dependence.
Evidence and Non-monotonicity.
Sampling and Ascertainment Bias; Bertrand's Box; the "Monty Hall" problem.
Interpretations of Probability: Objective and Epistemic Theories.
Generalizations and Laws; Counterfactuals.
Statistical Mechanics and the Temporal Anisotropy of physical processes; The Problem of Induction.

Schaum's ch. 9 pps. 226-234; ch. 10

VII. Representation and Measurement in the Natural and Behavioral Sciences (weeks 10, 11, 12)

   Nominal, Ordinal, Interval, and Ratio Scales.
   Aristotelian, Newtonian, and Relativistic Space and Time.
   Euclidean and Non-Euclidean Geometries.
   Psychophysics; Utilities and Probabilities.

VIII. Decisions and Games (weeks 13 and 14)

   The Concept of a Strategy.
   Prisoner's Dilemma and Prisoner's Dilemma Repeated; Nash Equilibria.
   Iterated Dominance arguments and Common Knowledge.
   Probabilistic and Causal Dependence; Newcomb's Problem.

Course Notes: Problems of Mutual Expectation.

The texts for this class are the following:

   A series of short expositions I have written which I refer to as *Course Notes* in the Syllabus. These can be found online.

   The Schaum's Outlines *Logic* (Second Edition), by John Nolt, Dennis Rohatyn and Achille Varzi.

There will be two exams. The exams will be open book (assigned and unassigned texts, notes, and other inanimate sources all allowed). (Note that the place, date and time of the second exam -- which I will announce later in the term -- may not correspond to the date for the final exam given in the University schedule).

A student's grade will be determined by the grades on the exams, on any homeworks, and by the quality of Class Participation. (Note that Class discussion provides an opportunity to demonstrate understanding of the material).

My class presents material that is conceptually and philosophically deeper than some students enrolling in a "Critical Thinking" class may expect. My grading will take this into account.

Note: The university has directed that all syllabi make note of the existence of The Rutgers Self-Reporting Absence Website (https://sims.rutgers.edu/ssra), as well as of the request that it be utilized by students to indicate the date(s) and reason for their absence from class.

Current Academic Integrity Policy: http://academicintegrity.rutgers.edu/academic-integrity-policy/

Student "Wellness" Services: Just In Case Web App: http://codu.co/cee05e (mental health information and resources)

Counseling, ADAP & Psychiatric Services (CAPS): (848) 932-7884 / 17 Senior Street, New Brunswick / rhscaps.rutgers.edu

Violence Prevention & Victim Assistance (VPVA) (848) 932-1181 / 3 Bartlett Street, N.B. / vpva.rutgers.edu/ (confidential crisis intervention, counseling, and advocacy)

Disability Services (848) 445-6800 / Lucy Stone Hall, Livingston Campus / https://ods.rutgers.edu

Scarlet Listeners (732) 247-5555 / http://www.scarletlisteners.com/ (Free and Confidential peer counseling and referral hotline)