CHAPMAN UNIVERSITY
University Honors Program
One University Drive
Orange, CA 92866

COURSE SYLLABUS

HON 359-01   **Spring 2018**
(Fundamentals of Deductive and Inductive Logic)

Instructor Information
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Office Location: Wilkinson Hall 233
Office Hours: MW 11-12, Th 10-2; please make an appointment at
www.calendly.com/pace-1

Catalog Description:
  Prerequisite: acceptance to the University Honors Program, or consent of instructor.
  A study of methods to distinguish good and bad reasoning. Students will learn how to
  "translate" natural language arguments into formal languages of sentential and
  predicate logic, to construct proofs in the language, and to understand the semantics
  (or model theory) for the language. (Offered as needed.) 3 credits.

Longer Description
Many people would sooner die than think; In fact, they do so.
                                                          --Bertrand Russell

Logic is the study of good and bad forms of reasoning. In this course, we will learn to identify
arguments that are the reasons people have for thinking what they do, and we will learn to
evaluate different forms of arguments.

Formal logic: The course will cover formal logic, which aims to represent certain aspects of
human reasoning symbolically. Formal languages bring to the surface the logical connections
between different claims and enable us to use mechanical and mathematical techniques for
evaluating arguments.

The value of studying formal logic: For most people, mastering a formal system is not an end in
itself. Doing so will, however, help you to become a better reasoner. The skills that you will
acquire in a careful study of logic can be very helpful in almost any course of study or career that
you choose. These skills include being able to quickly recognize good and bad forms of
reasoning, and being able to analyze statements, paying careful attention to what they actually say
and what they don't say. Studying formal logic will have additional benefits for any of you
planning on doing further study in philosophy; logic is the main tool that philosophers use to
investigate deep and important questions, and many philosophers use formal logic in their
writings. Finally, studying formal logic also may have a more immediate pragmatic effect as
preparation for important sections of the LSAT and the GRE.

Course Learning Outcomes:
  a. GE 7QI Learning Outcome: To apply and analyze quantitative techniques.
  b. Philosophy Program Critical Reasoning Outcome: To develop students' ability to construct and analyze complex arguments, and distinguish good reasoning from bad.
  c. To understand how to analyze and "translate" natural language arguments into symbolic languages and evaluate them.
  d. To understand deductive logical systems of predicate and propositional logic.
  e. To understand inductive logic, including probability theory.
  f. To appreciate some historical and philosophical contributions to the development of logic and challenges to its use.

Honors Program Learning Outcomes:
Upon completing a course in the University Honors Program students will have:
  a. Obtained a starting point for integrative exploration of the development of cultures and intellectual achievements through a variety of disciplinary and interdisciplinary perspectives;
  b. Sharpened their ability to critically analyze and synthesize a broad range of knowledge through the study of primary texts and through engagement in active learning with fellow students, faculty, and texts (broadly understood);
  c. Understood how to apply more integrative and interdisciplinary forms of understanding in the advancement of knowledge and in addressing complex challenges shaping the world;
  d. Developed effective communication skills, specifically in the areas of written and oral exposition and analysis.

Content:
  I. Propositional Logic
  - Translating English sentences into propositional logic
  - Evaluating deductive validity using truth-tables
  - Proving Deductive Validity
  - Philosophical and historical issues: Aristotle's arguments for law of non-contradiction, Aristotle's "Sea Battle" and disputes over the Law of Excluded Middle, Semantic Paradoxes (e.g., Sorites and the Liar), Informal Fallacies; Russell's Paradox; Lewis Carroll's Paradox

  II. Inductive Logic
  - The Axioms of the Probability Calculus
  - Bayes' Theorem
  - Fallacies of Inductive Reasoning
  - Calculating expected utility
  - Philosophical and Historical Issues: the debate over interpretations of probability theory; Hume's problem of induction, paradoxes of decision theory

[Or…

    II. Predicate Logic
- Translations in predicate logic
- Proofs in predicate logic
- Model Theory for Predicate Logic
- Philosophical and Historical Issues: Russell's Paradox, definite descriptions]

Note: After the unit on propositional logic, we will decide as a class whether to go more in depth with deductive logic by studying predicate logic, or turn to inductive logic and study probability theory.

Current Required Texts:

    Howard-Snyder et. al. *The Power of Logic*. 3rd Edition.

    Articles available on Blackboard

Instructional strategies:
The course will include lectures, oral presentations by students, critical thinking exercises, and information technology. The material is predominantly mathematical in nature, and thus there are few regular writing assignments. One 4 page paper and journal entries on philosophical issues arising from logic will be required.

Methods of Evaluation:

Homework and 1 pop quiz (if logically possible)	10%
2 Short papers (2 @3-4 pages)	10%
Incorporation of Logic Assignment	10%
Midterm Exam	30%
Final Exam (Comprehensive):	40%

Homeworks will be graded credit/no credit, with credit is awarded if I can tell that you put a good faith effort into the assignment and it was submitted on time. The overall grade for homeworks will be based on the percentage you get credit for.

Short papers will be on philosophical topics that come up in each of the two units. One of these will be due each half of the semester, and I will give you question prompts at least two weeks before it is due.

Incorporation of Logic Assignment: This assignment will require you to turn in an essay written for another class (it can be a rewrite of something you've done in the past) in which you use your logic skills to analyze an argument (either of your making or of others). It will be due around the time of the midterm.

Chapman University Academic Integrity Policy:
Chapman University is a community of scholars which emphasizes the mutual responsibility of all members to seek knowledge honestly and in good faith. Students are responsible for doing their own work, and academic dishonesty of any kind will not be tolerated anywhere in the university

Students with Disabilities Policy:
In compliance with ADA guidelines, students who have any condition, either permanent or temporary, that might affect their ability to perform in this class are encouraged to inform the instructor at the beginning of the term. The University, through the Center for Academic Success, will work with the appropriate faculty member who is asked to provide the accommodations for a student in determining what accommodations are suitable based on the documentation and the individual student needs. The granting of any accommodation will not be retroactive and cannot jeopardize the academic standards or integrity of the course.

Equity and Diversity
Chapman University is committed to ensuring equality and valuing diversity. Students and professors are reminded to show respect at all times as outlined in Chapman's Harassment and Discrimination Policy: http://tinyurl.com/CUHarassment-Discrimination. Any violations of this policy should be discussed with the professor, the Dean of Students and/or otherwise reported in accordance with this policy.

Policy on Electronic Devices
Laptops and cell phones have been shown to distract from learning in the classroom. Cell phone use is not allowed in class. Laptops may be used for taking notes only, and I reserve the right to disallow them if their use becomes a problem or to enhance discussion.
Prepared by: Michael Pace

Last revised: January, 2017