National Taiwan University of Science and Technology

2019 Summer Program

PHIL 200 Introduction to Logic

Course Outline

Term: July 01-August 02,2019

Class Hours: 10:00-11:50 (Monday through Friday)

Course Code: PHIL 200

Instructor: Dr. Job Chen

Home Institution: Clemson University

Office Hours: TBA and by appointment

Email: zhuoc@clemson.edu

Credit: 4

Class Hours: According to the regulations of Minister of Education, R.O.C, 18 class hours could be counted as 1 academic credit in all universities in Taiwan. This course will have 72 class hours, including 40 lecture hours, professor 10 office hours, 10-hour TA discussion sessions, 2-hour review sessions, 10-hour extra classes.

Course Description:

Introduction to Logic will provide students with an overview of the historic background and key conclusions in mathematical logic, including basics of the calculus, arithmetic, and set theory.

Course Objectives:

The general aim of this course is to describe logic in both philosophical and mathematical contexts. It's meant to exposit the historical background, the nature, and implications of logic. Students of this course will gain an understanding and appreciation of logic as an invaluable tool for critical thinking and reasoning, and be prepared for more advanced courses in philosophy and pure mathematics. The specific learning goals include:

- Historical backgrounds from Aristotle and other Greek philosophers

- Paradoxes
- Mathematical logic including discussions of calculus and set theory
- Metatheory of mathematical logic
- Philosophical implications

Required Textbooks:

Delong, H. (2004). A profile of mathematical logic. New York: Dover Publications.

Grading & Evaluation:

Assignments (40%) – Midterm exam (30%) – Final exam (30%)

Grades will be distributed as 90-100%=A, 80-89%=B, 70-79%=C, 60-69%=D; and below 60% = F.
Intermediary assignments will be posted throughout the course, to help students assess their needs and to ensure that all the important topics are well understood. Assignments are also an opportunity for students to ask questions concerning unclear notions, as the main objective is not to grade but to help everyone reach an optimal level of comprehension.

Midterm and final exams will target all topics previously covered in class. Lecture notes and assignments are important to succeed in the midterm and final exams, yet some questions will be specifically intended to stimulate students' critical thinking.

Attendance is extremely important for success in this class. It is expected that each student will commit fully to the assignments and readings required. Exams will cover the required texts as well as material presented or discussed in class.

Course Schedule

Week 1 Historical Background
Session 1: Course Introduction

Session 2: Aristotle's logic

Session 3: Syllogistic theory

Session 4: Greek logic

Week 2 Period of Transition

Session 1: Non-Euclidean geometry

Session 2: Mathematics and argumentation

Session 3: Set theory

Session 4: Paradoxes

Week 3 Mathematic logic

Session 1: Formal axiomatic method

Session 2: Primary logic: The propositional calculus

Session 3: General logic: The predicate calculus

Session 4: Set-theoretic logic: Higher-order predicate calculi

Week 4 Metatheory of mathematical logic

Session 1: The metatheory of the propositional calculus

Session 2: The metatheory of the predicate calculus

Session 3: The metatheory of arithmetic

Session 4: The metatheory of set theory

Week 5 Philosophical implications

Session 1: Church's thesis

Session 2: The nature of indeterminate statements

Session 3: The question of consistency

Session 4: Logic and philosophy