

Southeastern University
Steelman Library
Department of Classical Studies
PHIL 2173 Logic & Computation
Official Syllabus

Catalog Description

An important narrative of the course begins with the computer coming out of formal logic, but builds towards a sense of the power of the universal computer (an idea that develops through formal languages, regular expressions, deterministic finite automata, and Turing machines). However, the climax of the course occurs in the proof of the Halting Problem, demonstrating once and for all the limitation of algorithm, and therefore the objective limitations of computers, a discussion of which began with limitation due to complexity and speed, particularly for NP problems, and headed towards the use of heuristics when algorithms were not possible. This narrative ultimately highlights that the human mind has the ability not only to think algorithmically, but also to be struck with insight, which is not a function of algorithm. The computer, by contrast, has only the ability to perform algorithms. Thus, this thread raises strong arguments against the notion of truly creating “artificial intelligence” on the computer.

The focus of most of the course is on our programming of the computer, which can be seen as “man’s influence on the machine.” After following the arc of the course, students are in a position to consider the reverse: the influence of technology on man. The main thought leader for students in this is Neil Postman, but we also include a short story by E.M. Forster that deals with related themes.

Prerequisite: None

Credit Hours: 3

Repeatable: Course not repeatable

Intended Learning Outcomes (4-7 required)

Students who successfully complete this course will:

1. Learn the foundational elements of formal logic.
2. Build a foundation in basic coding.
3. Grasp the philosophical connection between formal logic and coding
4. Begin to see the world through the lens of computation.
5. Understand the limits of formal logic and computation.
6. Apply this to consider the appropriate place of computers in society and in the lives of individuals. All these are oriented toward the end of adding computational and algorithmic thinking to the students’ intellectual toolbox.

Version History

04/05/2024 v1.0 Original course proposal.