

# PHIL 418A: Models and Simulations in Philosophy and Economics

Instructor:	Eric Pacuit (pacuit.org)
Semester:	Fall 2017
Email:	epacuit@umd.edu
Course Website:	myelms.umd.edu/courses/1230825
Office:	Skinner 1103A
Office Hours:	Tuesdays 10:30am - noon, or by appointment
Class Times:	MW 1:00pm - 1:50pm
Class Location:	Skinner 1115

## 1 Course Description

Computer simulations have been used for almost as long as there have been computers. The earliest scientific use of computer simulations were for physics and engineering. Will this bridge hold up to strong winds? What is happening inside of a nuclear explosion? Increasingly people are also employing computer simulation for use in understanding social behavior both in humans and other animals. How can cooperative institutions form out of the “state of nature”? How can groups of scientists come to know so much about nature? In the last sixty years, researchers have use mathematical and computer models to answer such questions. This class is about the nuts and bolts of computer simulation of social behavior and about the underlying theory behind this work. The course also discusses the philosophical issues that arise when evaluating the use of mathematical models in economics and philosophy.

## Course Objective

By the end of this class, you will be able to write your own computer simulation of social behavior using the programing tool NetLogo. In addition, you will be able to describe both the structure and results of your simulation.

Also by the end of this course, you should be able to think critically about simulations designed by others. You should be able to have developed thoughts about the appropriateness of a simulation for a given purpose.

## Readings

We will read a number of research papers and chapters from books throughout the semester. The papers and chapters will be provided on ELMS. Three useful textbooks for this course are:

- J. McKenzie Alexander, *The Structural Evolution of Morality*, Cambridge University Press

- S. Railsback and V. Grimm, *Agent-Based and Individual-Based Modeling: A Practical Introduction*, Princeton University Press
- M. Weisberg, *Simulation and Similarity: Using Models to Understand the World*, Oxford University Press

## Communication about this Course

All announcements (e.g., changes to the schedule, hints about the assignments or quizzes) about the course will be posted on the ELMS announcement page.

<https://myelms.umd.edu/courses/1230825/announcements>

Please make sure that you check this page regularly and/or receive the email notifications from ELMS when the page is updated.

## Grading Policy

Your grade will be calculated as follows:

- Attendance and participation: 10%
- Programming exercises: 20%
- In class presentation: 20%
- Mid project report: 10%
- Final presentation: 20%
- Final report: 20%

You are allowed three absences throughout the semester without any need for an explanation. If you are absent more than that you must excuse all absences in order not to lose points. Plan accordingly.

I will grade on a curve (this means that, for example, a final average of 90% may turn out to be an *A* rather than an *A-*). See the undergraduate catalogue for the official description of grades, e.g., *A+*, *A*, *A-*, etc.: <http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1584/s/1534>.

## Project

Over the semester, you will develop a computer simulation of social behavior on a topic of your choice. Along the way you will write a midterm report on the project and give a class presentation to get feedback from us. You will need to write a final report and do a final presentation for the class (this will be done during the scheduled final exam).

## Presentation

You will be asked to do a presentation on a paper that makes use of a computer simulation (The papers will be provided on the course website). The presentations will be scattered throughout the semester. You will chose a paper, prepare a handout and/or slides, discuss the issue and the mathematical/computational model used in the paper, and raise some questions for discussion.

## Programming Exercises

There will be some programming exercises, which you must do and turn in, and which I will look at to get a sense of where you are, but grade only for completion. We will then discuss the exercises in class. For each programming assignment, I will give 10 points if it is turned in on time and (mostly) completed, and 8 points for any assignment that is turned it after the due date (and 0 for any assignment not turned in).

## Class Cancelations

The University may be closed in the event of an emergency, in which case class will be cancelled. To find out if the University is closed you can check its main site (<http://www.umd.edu>), its emergency preparedness site (<http://www.umd.edu/emergencypreparedness/>), or call the “snow phone line” at 301-405-7669 (which covers more than just snow caused closings). If class is cancelled while the University remains open, then there will be an announcement posted on the course ELMS page.

**Emergency protocol:** In the case of an extended closure to the University (e.g., because of inclement weather), consult the ELMS course page for announcements and changes to any due dates.

## Academic Support

You should make sure you are familiar with the rules regarding proper academic conduct as outlined at <http://www.shc.umd.edu/>.

**Tutoring.** The Academic Achievement Programs offers free tutoring for PHIL170 through the Academic Success and Tutorial Services office. To connect with a complimentary, peer tutor for this course, sign up directly at <https://umdtutoring.mywconline.com/>. For questions, contact Christine Duchouquette, Tutorial Coordinator for the Academic Achievement Programs (AAP) at [cduchou@umd.edu](mailto:cduchou@umd.edu) or 301-405-4745.

**Accommodations.** Students who require special accommodations should inform the instructor at the beginning of the course, and must provide the appropriate documentation from the DSS office (see <http://www.counseling.umd.edu/DSS/>).

## **Course Procedures and Policies**

Consult the following webpage for the official procedures and policies for this course:

[www.ugst.umd.edu/courserelatedpolicies.html](http://www.ugst.umd.edu/courserelatedpolicies.html)