

# Econ 3750B: Syllabus

## 1 Course Information

### Instructor

Douglas Hanley, [doughanley@pitt.edu](mailto:doughanley@pitt.edu)

Lecture: T 3:00-5:30, 4940 Posvar

Office hours: TBD, 4507 Posvar

## 2 Summary

In this part of the course, we will focus on computational tools and methods, both in the context of numerically solving theoretical models and structurally estimating their parameters, as well as in the context of using machine learning as a part of empirical analyses of large and unstructured datasets. We will be learning and using Python for the entirety of this part of the course.

## 3 Tools

You should have a computer of some sort. If that's an issue, let me know and I can loan you a laptop. We'll be doing everything in Python. The easiest way to get this is through the Anacond distribution (<https://www.anaconda.com/download>). Advanced users of OSX or Linux can also install Python natively through a package manager.

For homework writeups, you'll want to use LaTeX or some equivalent thereof to generate PDFs. If you don't already know how to do this, now is the time to learn! You'll only be using it more from now on. I'm also working on a LaTeX replacement (<https://github.com/iamlemec/elltwo>) you could try out, though its not for the faint of heart quite yet.

## 4 Resources

There is no textbook, but here are some useful online resources:

[Data Science](#) tutorial by Yours Truly. Some but not all of this will be covered early on in class.

## 5 Grading

### Lectures and Reading

Much of the course material will be presented in self-contained lectures. Additionally, I will provide code examples and Jupyter notebooks to demonstrate the concepts and methods described in lecture.

### Assignments and Grading

There will be three computational assignments, roughly corresponding to the three modules below. Each assignment will be worth 25% of the grade and class participation will be worth 25%. This grade for this part of the course will then be aggregated to form the total course grade.

## 6 Course Outline

This is an approximate timeline for the course. Actual results may vary.

Session	Topic
<b>I</b>	<b>Computational Methods</b>
1	Intro to Python
2	Optimization Methods
3	Differentiable Programming
<b>II</b>	<b>Structural Estimation</b>
4	Dynamic Optimization
5	General Equilibrium Models
6	Estimation and Calibration
<b>III</b>	<b>Machine Learning</b>
7	Text Analysis
8	Neural Networks
9	Deep Learning

## 7 Disclaimers

Try to complete your assignments on time. If you need an extension for a plausible reason, let me know and we can work something out. You are free to consult any sources in the course of completing your homework. All I ask is that you properly attribute them.

Statement on academic integrity:

Cheating/plagiarism will not be tolerated. Students suspected of violating  
↪ the University of Pittsburgh Policy on Academic Integrity, from the  
↪ February 1974 Senate Committee on Tenure and Academic Freedom reported  
↪ to the Senate Council, will be required to participate in the outlined  
↪ procedural process as initiated by the instructor. A minimum sanction  
↪ of a zero score for the quiz or exam will be imposed.