

# 80-321: Causation, Law, and Social Policy

## Spring 2016

### Syllabus

#### 1. General Information

-General Course Website: <http://www.cmu.edu/blackboard/>

##### -Instructors

Richard Scheines

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Th 1:30-2:30, or appointment

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#### 2. Overview

Social policy requires causal knowledge. Does video game violence really make people more violent? Do school vouchers really help inner city students become better educated? Do tough drug laws reduce drug use? What is involved in scientifically investigating questions like these?

Legal proceedings involve causal claims. Did Marcus Burrage's sale of heroin to Joseph Banka *legally cause* Banka's death after injecting it? Does the Army bear any responsibility for the veterans who get adult onset diabetes and who might have been exposed to Agent Orange?

This course examines the nature of causal claims, how social scientists, lawyers, and policy makers learn about and decide on such claims. There are several main goals for the course:

1. To understand the concept of causation philosophically, legally, and scientifically/statistically,
2. To understand the methodological problems faced by policy makers and courts who rely on medical, social and behavioral science to inform them about causal claims, and
3. To be able to successfully apply these concepts to realistic case studies, and
4. To be able to carry out an informative literature review on a causal question,

We have divided the course into five sections:

1. Causation – Philosophical Foundations
2. Causation, Statistics, and Social Science
3. Combining Evidence for Causation and Systematic Review
4. Causation and the Law
5. Applications

### 3. Tentative Schedule (almost certainly will change!)

#### Part I: Philosophical Accounts of Causation

##### Week 1 Jan. 12-14    **Introduction**

- Topics
  - Course Overview
  - The Nature of Philosophical Theories
  - Criteria for a Good Philosophical Theory of Causation
- Readings
  - Causation, (2004). Scheines, R., in *New Dictionary of the History of Ideas* (causation\_scheines.pdf)
- *Assignment 1 Due – Friday, Jan. 15, noon*

##### Week 2 Jan. 19-21    **Counterfactual Accounts of Causation**

- Topics
  - David Lewis' Counterfactual Theory
- Readings
  - Causation, David Lewis (1973), *Journal of Philosophy*
  - Stanford Encyclopedia of Philosophy – Counterfactual Theories of Causation: <http://plato.stanford.edu/entries/causation-counterfactual/>
- *Assignment 2: Due – Friday, noon*

##### Week 3 Jan. 26 – 28    **Probabilistic Accounts of Causation**

- Topics
  - Probabilistic Causation
- Readings
  - Stanford Encyclopedia of Philosophy – <http://plato.stanford.edu/entries/causation-probabilistic/>
- *Assignment 3: Due – Friday, noon*

##### Week 4 Feb. 2 - 4    **Philosophical Theories of Causation & Literature Search**

- Topics
  - Other Theories: Manipulation, Salmon's Process Theory, etc.
  - How to conduct a literature search (Donna Beck)
- Readings
  - Causation, (2004). Scheines, R., in *New Dictionary of the History of Ideas* (causation\_scheines.pdf)

### Week 5 Feb. 9- 11 **Actual Causation**

- Topics
  - Actual Causation
  - Chris Hitchcock's Theory of Actual Causation
- *Readings*
  - Hitchcock, C., (2007). Prevention, Preemption, and the Principle of Sufficient Reason (Hitchcock.pdf)
- *Assignment 4 Due – Friday, noon*

### Week 6 Feb. 16-18 **Midterm Exam**

- Topics
  - Review (Tuesday)
  - *Exam* (Thursday)
- *Assignment 5: Practice Midterm – due Tuesday by class*

## **Part II: Causation and Statistics**

### Week 7 Feb. 23 – 25 – **Statistical Causal Models**

- Topics:
  - Causal Graphs
  - Probabilistic Association & Independence
- *Readings*
  - OLI – Modules on Causal Graphs, Interventions, unit on Association & Independence, and D-separation. Instructions below.
- *Assignment 6: OLI quiz for D-separation module*

### Week 8 Mar. 1 – 3 **Statistical Evidence for Causation**

- Topics
  - Experimental Studies
  - Non-experimental strategies for inferring causation
- *Readings*
  - Scheines\_Reference\_Manual, sections 2,3

### Week 9 Mar. 8 – 10 **No Class (Spring Break)**

## **Part III: Combining Evidence and Systemic Reviews**

### Week 10 Mar. 15 – 17 **Statistical Evidence for Causation**

- Topics
  - Controlling for Confounding
  - Measurement Error
  - Evaluating Studies for Systematic Review
- Readings
  - *Chapters 1-4* - Review of EPA's IRIS Process (Skim)
  - *Scheines\_Reference\_Manual*, section 5
- *Assignment 7*, Due Friday

### Week 11 Mar. 22 – 24 – **Systematic Review**

- Topics
  - Evaluating Evidence
  - Combining Evidence
- Readings
  - *Chps 5,6* - Review of EPA's IRIS Process
  - *Chp 5* – Food Marketing to Children and Youth

## **Part IV: Causation and the Law**

### Week 12 Mar 29 - 31 : **Causation, Responsibility, and the Law**

- Topics
  - Legal theories of causation
- Readings
  - *Wikipedia*, Causation in the Law - [http://en.wikipedia.org/wiki/Causation\\_\(law\)](http://en.wikipedia.org/wiki/Causation_(law))
  - Stapleton, Causation in the Law (Stapleton.pdf)

### Week 13 April 5 - 7 : **Student Case Presentations**

- *Assignment 8*, Due Tuesday before class
- Legal Case Presentations – Students

## **Part V: Applications**

### Week 14 April 12 – 14- **Group Work**

- Tuesday: Group Consultations
- Thursday: *No class - Carnival*

Week 15 April 19 – 21 – Lead and IQ

- Readings
  - Executive Summary: NTP Monograph
  - Preamble and Executive Summary: EPA Integrated Science for Lead

Week 16 April 26 - April 28 – Group Presentations

**Final Project Reports**

- **First Draft: Friday, April 29**
- **Final Draft: Friday, May 6th**

## 4. Expectations

### Class Participation

We expect everyone to attend class and participate in discussion. We will frequently make announcements of schedule changes, reading assignment changes, etc. in class. If you cannot make a class, please arrange to get notes or announcements in class from someone else. Although I will try to update the syllabus and email announcements, I am not reliable or consistent about this, and it is your responsibility to get any information you might have missed in class. Class participation, which is 15% of your grade, depends upon coming to class prepared (please bring either an electronic or hardcopy of the reading we will be discussing to class) and being willing to ask a question about the assigned reading or material or to respond to questions I pose. We will give you feedback by mid-term grades about how you are doing in this regard, or anytime you want.

### Homeworks/Assignments

There will be approximately 8 short homework assignments over the course of the semester. You may drop one homework from counting toward your grade. These will be worth 35% of your grade. Homeworks/assignments should be turned in as MS Word or pdf files, attached to email sent to [80321Spring2016@gmail.com](mailto:80321Spring2016@gmail.com).

### Exam

After the first section of the course, we will have an exam that will count as 25% of your grade. We will give you a sample exam at least 5 days before the real exam.

### Group Project

Based on topical preference, we will form approximately 6 groups, each of which will work throughout the semester toward a) collecting a body of scholarly literature on a causal question relevant to social policy (e.g., do violent video games cause violence in real life), b) systematically evaluating each component of this literature, c) systematically combining the evidence into a single judgment, and d) presenting this joint work in a 15-20 minute presentation the last week of class as well as summarizing it with a 20-30 page written report. We will form groups based on topical preference and distribution of skills and experience. Clear guidance will be given for what is expected at each stage of the work. 25% of your grade will depend on the group project, and this will be broken in to three pieces. We will ask all group members to evaluate their own and teammate contributions in order to assign individual grades.

## 5. Grading

Your grade will be based on the following components:

- In-Class – Preparation and Contribution – 15%
- Homework Assignments: 35%
- Midterm Exam: 25%
- Group Project: 25%
  - Literature Collection – Problem formulation: 5%
  - Group Presentation: 10%
  - Group Report: 10%

Graduate students (80-621) will be held to a higher standard on all homework assignments, and will be expected to play a lead role in the group project.

## 6. OLI

The Open Learning Initiative hosts online course materials – one such course is called Causal and Statistical Reasoning, and the material in it is excellent background for this course (and more!). We will use several modules of the course as the “reading” for week 7. You may sign up for the course beginning on Jan. 18, and use it throughout the semester.

Access your course at: <https://oli.cmu.edu/>

Course name: Causal Reasoning

Course Key: 80-321

Institution: Carnegie Mellon University

Duration: 01/18/2016 - 05/31/2016

Price per student: \$15.00 USD

Students will be required to pay \$15.00 USD for the course before they can access the materials. Visa and MasterCard credit and debit cards are accepted. Your students' secure payment will be processed by Carnegie Mellon University. If you have any questions about payment, reply to this message or click the HELP button at the top of any course page.