

# Causal Reasoning – HPS 0610

## Spring 2009

300 Old Engineering Hall  
Thursdays 6:00 – 8:30 pm

### Overview

Claims about causal relations abound in everyday life and in the media: did this medication cause someone to have a heart attack? Does breastfeeding really increase intelligence? How does BMI influence net income? This course examines these kinds of scientific causal claims. Students will learn the terminology and mathematical tools to understand and evaluate causal claims, to represent them graphically, and make calculations based on causal and statistical relationships. Key causal and statistical concepts will be explicated, such as association, correlation, and independence. Students will be able to use causal theories to make predictions about observable associations, and to infer from observed associations to causal theories. These skills will be applied in case-study sessions to actual examples in current news about claims of causal influence.

Instructor: Catherine Stinson  
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Email: [cstinson.teach@gmail.com](mailto:cstinson.teach@gmail.com)  
Office Hours: M, W 11-11:50 am

### Course Materials

There are no textbooks for this course. All the material is online. There are two webpages affiliated with this class, both of which students need to keep track of. Students are responsible for information that is sent to their Pitt email accounts, and are expected to regularly check this account.

#### Courseweb: <http://courseweb.pitt.edu>

- Log in with your regular Pitt username and password. On the right of the opening page, you will see the name of this course. That link will take you to the course webpage.
- Announcements, grades, handouts, and explanations will be posted on the courseweb site.

#### Causal Reasoning Online Course: <http://oli.web.cmu.edu>

- All course materials, activities, and quizzes are available on this site.
- The cost to use the site is \$15. This must be paid by credit card upon registration.
- Instructions for registration are on a separate sheet. Please follow them carefully.
- Once you are registered, you may begin working on this course. Log in at this site and work through each module.
- At the end of each module, there is a quiz, which is taken online and submitted for credit.
- You can preview the course content for free at <http://www.cmu.edu/oli/courses/csr>

## Format

The course content is contained in online modules that students work through on their own time. Students can spend as much time as they need to, when they want, working on the modules, as long as they get done on schedule. Modules must be completed with a passing grade **before** each class (by 5pm). There will be a midterm and a final exam, each administered during class hours.

During class time we will work through case studies from news articles. **Attendance is mandatory** if you scored 10 or less on that week's quiz. Students may miss up to **2** sessions per semester without penalty; each subsequent missed session will result in a 1 point deduction from your quiz score. This includes excused and unexcused absences alike – remember that you might get sick before the semester is over, so save these absences for when you really need them.

Each quiz may be attempted up to three times. If you fail to pass a quiz in three attempts, then you will receive the lowest of your three scores for that quiz. If you have already failed one or two attempts, please take time and go back through the module to learn what you need to – failing three quizzes is something that shouldn't happen to anyone this semester.

The instructor is available to provide help in office hours, via email, and in weekly case study sessions. Students should be aware that the instructor has access to information about which pages were visited by students, how long a student took on a given quiz (as well as the time and date of the quiz), and how much time elapsed between quiz attempts.

## Grading

- **Quizzes and Causality Labs - 50%**
  - Students must pass the quiz at the end of each module with at least 8 out of 12 questions correct. Students may take up to 3 attempts to pass these quizzes.
  - The highest score you receive on each quiz will be used to calculate your grade if you pass on at least one attempt, otherwise your lowest score counts.
  - Modules 4, 5, 6, 7, 8, 10, 14, and 16 include Causality Lab exercises. For these Modules, students must complete, submit, and pass at least 1 of the Lab exercises. You may choose which one to submit, and if you do not pass the exercise you may choose another.
  - Failing to submit a passed causality lab exercise for these modules will result in a 20% reduction of your quiz score for that week.
  
- **Midterm - 25%**
  - The midterm is short-answer and multiple choice. It covers the material in the first half of the semester.
  
- **Final - 25%**
  - This has the same format as the midterm. It covers material from the entire course, but weighted towards the second half of the semester.

98-100% = A+	87-89% = B+	77-79% = C+	67-69% = D+	
93-97% = A	83-86% = B	73-76% = C	63-66% = D	<60% = F
90-92% = A-	80-82% = B-	70-72% = C-	60-62% = D-	

## Schedule

Week	Date	Topic
1	January 8	Introduction, overview, demonstration of modules
2	January 15	Module 1: Causation Preliminaries, Module 2: Causation Among Variables
3	January 22	Module 3: Indeterministic Causation
4	January 29	Module 4: Causal Graphs (lab)
5	February 5	Module 5: Interventions (lab)
6	February 12	Module 6: Relative Frequency (lab)
7	February 19	Module 7: Conditional Relative Frequency (lab)
8	February 26	<b>Midterm</b>
9	March 5	Module 8: Independence and Association (lab)
10	March 19	Module 10: Causation vs. Association (lab)
11	March 26	Module 11: Causation to Unconditional Association
12	April 2	Module 14: Problems with Causal Discovery (lab)
13	April 9	Module 16: Experiments (lab)
14	April 16	Module 18: Case Studies
15	April 23	<b>Final Exam</b>

## Disabilities

If you have a disability that requires special testing accommodations or other classroom modifications, please notify both the instructor and Disability Resources and Services (<http://www.drs.pitt.edu>) no later than the 2nd week of term. To notify Disability Resources and Services, call 412-648-7890 (Voice or TTD) to schedule an appointment. The Office is located in 140 William Pitt Union.