36-309 Summer Two 2014
Experimental Design for Behavioral and Social Sciences 9.0 units

Course Syllabus

Instructor: Jerzy Wieczorek
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Office hours: Mon 4-5pm (BH 140C);
and Weds 2-3pm (BH 140F)

TA: Mattia Ciollaro
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Office hours: Tues 5-6pm (BH 140C);
and Weds 12-1pm (BH 140F)

Class meetings: Mon, Tue, Wed, Fri 10:30am–11:50am, Porter Hall 226A
Lab meetings: Thu 10:30am–11:50am, **Baker Hall 140E (moved from Hunt Library)**

Exam dates: Midterm exam: Fri, Jul 18. Final exam: Fri, Aug 8

Website: http://www.cmu.edu/blackboard/

Prerequisites: Any of 36201, 36207, 36217, 36220, or 36247

Textbook: *Experimental Design and Analysis* by Howard Seltman, free at
http://www.stat.cmu.edu/~hseltman/309/Book/

Software: SPSS, available on campus lab computers in BH140, or through Virtual Andrew:
http://www.cmu.edu/computing/clusters/software/virtualandrew/

Course objectives

An effective experimental study is a powerful source of evidence, potentially more informative and convincing than anecdotes or observational studies. Upon completing this course, you should be able to:

- Design an experimental study, while being aware of the competing risks and benefits of the available choices, and avoiding common flaws
- Select the appropriate statistical analysis for your experimental study data, and carry out the analysis correctly
- Properly interpret the results of your statistical analysis and communicate them to a lay audience
- Recognize under what circumstances you may need help with designs or analyses beyond those discussed in this class

Grading policy

Grading scale: $\leq 60\%$ F, 61-70% D, 71-80% C, 81-90% B, 91-100% A.

- Homeworks: 40%
- Labs: 10%
- Midterm: 15%
- Final exam: 25%
- Attendance and participation: 10%

Late assignments will not be accepted. If you cannot finish on time, turn in what you have for partial credit. If you submit a late assignment, we can still give you feedback, but no credit. Your lowest two homework grades will be dropped.

If you have to miss a deadline or exam, please arrange the makeup exam with us **at least one week in advance**. Makeup exams will be oral examinations.

If you feel something was misgraded, you will have one week to appeal a grade after the assignment was returned to you. However, your grade may also go down if we notice other errors as we re-grade.

Course requirements

- Homeworks: twice a week, due by the beginning of class (10:30am) on Tue and Thu
  Please submit your homeworks as hard copy (printouts). We will drop your lowest two homework grades, but **late assignments will not be accepted.**
- Labs: once a week, on Thu, in Baker Hall 140F; attendance is mandatory
  Please turn in your assignments as hard copy at the end of each lab session. Labs will be graded as either complete (showing honest effort, even if not fully correct) or incomplete. The labs are designed so that a prepared student can easily finish in the allotted time. Please attend labs in person, so that we can help you address any struggles on the spot.
- In-class exams: **midterm exam: Fri, Jul 18; final exam: Fri, Aug 8**
  Closed book, closed notes. You may bring a one-page cheat sheet.
  Details of exam content will be discussed in class.
- Attendance and participation: *We aim to make attending lectures and labs worthwhile for you, with interactive live demos and peer discussions in class. Your classmates will benefit from everyone's presence and active participation. For a full grade, we expect you to engage with and turn in the daily in-class experiments and group activities.*
  Please speak with me as soon as possible if you are worried about your ability to attend regularly and participate actively.

Academic integrity

All students are expected to comply with the CMU policy on academic integrity:
http://www.cmu.edu/academic-integrity/
Always ask if you are unsure whether your actions comply with the assignment or exam instructions. Always acknowledge any help received on assignments: list the names of the people you worked with, and cite any external sources you used. You are encouraged to discuss homework problems and lab assignments with your classmates, but the work you submit must be your own.

Cheating or copying of any sort are typically grounds for course failure. At the very least, you will receive no credit for the assignment, and we reserve the right to drop you down a letter grade. We are obliged to report any incidents to the appropriate university authorities.

Laptops; mobile devices; video/audiotaping

Technology should be an aid, not a distraction from being engaged, in this participatory course. Any laptop use in class should be directly related to class. The instructor reserves the right to not allow laptop use during class.

Likewise, all mobile devices (cellphones, pagers, smartphones, etc.) should be silenced and put away during class. Texting is not allowed, nor is it acceptable professional behavior.

No student may record or tape any classroom activity without the express written consent of the instructor.

Communication

Assignments, updates, and other class information will be posted on Blackboard. Help with using Blackboard is available at http://www.cmu.edu/blackboard/gettingstarted/

Email

We are obligated to communicate with you about the course only through your ...@cmu.edu or ...@andrew.cmu.edu account. Please check your CMU email regularly, or set up email forwarding if you normally use another email service.

Disability services

If you have a disability and need special accomodations in this class, please contact the instructor and the Disability Resources office: 412-268-2013, access@andrew.cmu.edu
http://www.cmu.edu/hr/eos/disability/

Review materials

If you need to review content from the prerequisite courses, we encourage you to use the free Open Learning Initiative course materials at
`http://oli.cmu.edu/courses/free-open/statistics-course-details/`

Tentative schedule

Date	Topic	Textbook chapters
Mon, Jun 30	Review and intro to SPSS	1, 2, 4, 5
Tue, Jul 1	Review and intro to SPSS	
Wed, Jul 2	Basic statistical concepts and 1-way ANOVA	3, 6, 7
Thu, Jul 3	*Lab, in Hunt Near/Far*	
Fri, Jul 4	**Holiday: no class**	
Mon, Jul 7	Basic statistical concepts and 1-way ANOVA	
Tue, Jul 8	Basic statistical concepts and 1-way ANOVA	
Wed, Jul 9	Experimental design concepts	8
Thu, Jul 10	*Lab, in Hunt Near/Far*	
Fri, Jul 11	Experimental design concepts; *early course evaluations*	
Mon, Jul 14	Simple linear regression	9
Tue, Jul 15	Simple linear regression	
Wed, Jul 16	Midterm review	
Thu, Jul 17	*Lab, in Baker Hall 140E*	
Fri, Jul 18	**Midterm exam**	
Mon, Jul 21	ANCOVA and multiple regression	10
Tue, Jul 22	ANCOVA, multiple regression, 2-way ANOVA	11
Wed, Jul 23	2-way ANOVA and interaction	
Thu, Jul 24	*Lab, in BH 140E*	
Fri, Jul 25	Power	12
Mon, Jul 28	Power	
Tue, Jul 29	Contrasts	13
Wed, Jul 30	Contrasts	
Thu, Jul 31	*Lab, in BH 140E*	
Fri, Aug 1	Categorical outcomes	16
Mon, Aug 4	Categorical outcomes	
Tue, Aug 5	Repeated measures and mixed models	14, 15
Wed, Aug 6	Repeated measures and mixed models	
Thu, Aug 7	*Review session (in BH 140E)*	
Fri, Aug 8	**Final exam**	