Statistics 5301
Intermediate Data Analysis I
20576 (Graduate)
20578 (Undergraduate)
Autumn Semester 2017

Class Meetings: Caldwell Lab, Room 120, MW 8:00am – 9:50am
Instructor: Nicole Kelbick, PhD
Contact: (614)-292-0293, kelbick.1@osu.edu
Office Hours: 435 Cockins Hall (CH), T/W/Th, 2:15pm-3:15pm or by appointment

Graders:

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Prerequisites: Prerequisites: Math 1075 (104) or equivalent, or Math Placement Level of R, or permission of instructor.

Enrollment: ADD and SECTION CHANGES will be processed, contingent upon availability, starting at 7am on Monday August, 28th through Tuesday, August 29th. This will be on a first-come first-served basis in 408A Cockins Hall. **The instructor does not sign any Add or Section Change forms.** Check out https://stat.osu.edu/undergraduates/academic-programs/course-enrollment for more detailed information regarding Add and Section Changes.

Closed Section Strategy: If the section you wish to take is closed, consider enrolling into another section that is still open. It is much easier to do a section change (and there are no late add fees either) if a space opens up. It is more complicated to do a late enrollment and the chance of succeeding is not great.

Textbooks:

(1) *Introduction to the Practice of Statistics* (8th edition)
by David S. Moore, George P. McCabe, and Bruce A. Craig.

Although this text is NOT required it is highly recommended (currrent or previous vessions) and can be used as a reference for the first half of the course. Chapters 1 – 8 of the book are reviewed in this course. Topics include Looking at Data (distributions, relationships – two-way tables – scatterplots - simple linear regression, producing data), Probability, Samping Distributions, Inference for Means and Proportions (one-sample and two sample z-tests and t-tests), ANOVA.

(2) *The Statistical Sleuth: A Course in Methods of Data Analysis* (3rd edition) by F. L. Ramsey and D. W. Shafer.

This text is used for the second half of the course and is also used in STAT 5302, the second course in the Intermediate Data Analysis sequence.

Chapters 1 – 6 will be covered for this course; they encompass topics in Drawing Statistical Conclusions, Inference Using t-Distributions, A Closer Look at Assumptions, Alternatives to t-Tools (Nonparametric tests), Comparisons Among Several Samples (ANOVA), and Linear Combinations and Multiple Comparisons of Means.

The textbooks are on reserve in the 18th Ave and Thompson's libraries.

Website: The course has a web page on Carmen (http://www.carmen.osu.edu). Homework assignments, solutions, class schedule, and other relevant material and announcements will be posted on the web page. Please check it on regular basis.

Course Description: Stat 5301 is the first course in a two-semester non-calculus sequence in data analysis covering descriptive statistics, design of experiments, probability, statistical inference (one-sample and two-sample problems, goodness of fit, and one-way ANOVA). This course satisfies the General Education (GE) requirement in Data Analysis.

Goals: Develop the skills to draw sound statistical conclusions by critically evaluating data-based results.

Expected Learning Outcome: Students understand basic concepts of statistics and probability, comprehend methods needed to analyze and critically evaluate statistical arguments, and recognize the importance of statistical ideas.

Students in Statistics 5301 are expected to be able to identify an appropriate analysis for data collected in a study, carry out such an analysis, examine whether the assumptions behind the analysis are reasonable, and recognize the strengths or weaknesses of the study based on how the data were collected.

Doing so requires understanding basic concepts in statistics and probability; the ability to create graphical and numerical summaries of data; understanding how the design of a study affects the conclusions that can be made; and the ability to carry out basic statistical analyses (by hand or using statistical software). Students will conduct analyses of data, including a discussion (in plain English) of what conclusions can be drawn.

Important Dates:

Weekday(s)	**Date**	**Reason**
Monday	September 4th	Labor Day (no classes)
Wednesday	**September 27th**	**Midterm 1 (Thursday in class)**
Thursday/Friday	October 12th-13th	Autumn Break (no classes)
Wednesday	**October 25th**	**Midterm 2 (Thursday in class)**
Friday	November 10th	Veteran's Day (no classes)
Weds/Thurs/Friday	November 22nd-24th	Thanksgiving Break (no classes)
Wednesday	December 6th	Last day of classes
Monday	**December 11th**	**Final Exam (8:00am – 9:45am)**

Grading: Your grade will be based on homework assignments, two midterms, and a comprehensive final exam. The relative point-worth of these components are as follows:

Homework	25%
Midterm I	25%
Midterm II	25%
Final	25%
	100%

Homework: There will be approximately weekly assignments. Homework problems and solutions will be posted on Carmen.

Computing: You will be required to do some basic statistical analyses on the computer using the statistical software package R for your assignments.

1. Download R for free from https://www.r-project.org/.
2. Install R.
3. Download R Studio, a more user-friendly interface, from https://www.rstudio.com.
4. Install R Studio
5. **NOTE**: **INSTALL R FIRST**, **THEN RStudio.**

Exams: All exams will be closed book and closed notes. The final exam will emphasize new material but some prior material will still be fair game if used in the current material (e.g. use of normal distributions). For the first midterm you are allowed to bring one standard size (8.5 × 11 inch) sheet containing formulae. The second midterm you are allowed one new formula sheet as well as the one from the 1st midterm. For the final exam, you are allowed one new formula sheet (standard sized (8.5 × 11 inch) as well as the formula sheets from the first two midterms.

NOTE: I am not going to require a specific calculator for exams. HOWEVER, you will be expected to show your work and only partial credit will be given for correct answers that do not. Exam rules will be announced in class. I like to avoid makeup exams as much as possible. If there is a potential for a conflict, please contact me WELL IN ADVANCE.

Exam	Date	Chapters Covered
Midterm I	Wednesday, Sept. 27th, in class	TBA
Midterm II	Wednesday, Oct. 25th, in class	TBA
Final	Monday, Dec. 11th, 8:00am-9:45am	TBA

Office Hours: While questions are welcome during class sessions, all students should feel free to visit during office hours for individual assistance with the course material. Questions regarding grades or scores will only be answered during office hours. Students unable to attend office hours may easily make an appointment to see the instructor at another time.

Communication Devices: Cell phones, PDAs and other communication devices must be either turned off or put on vibrate during class. Please refrain from texting during class as a courtesy to those sitting around you. All electronic devices other than a calculator must be shut off and put away during examinations.

Academic Misconduct: Although you are encouraged to work together, you are expected to produce independent work for homework and exams. Academic misconduct for any sort will not be tolerated. If students are caught indulging in dishonest activities during exams, they will be reported immediately, without any exception. Please review OSU's policies at http://studentaffairs.osu.edu/csc/.

Special Accommodation: Students with ADA-documented physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Office of Disability Services (ODS) in Room 150 of Pomerene Hall, (614) 292-3307. Please contact the ODS as early in the semester as possible. You can also contact the instructor privately to discuss your specific needs.

Disclaimer: The schedule and procedures contained in this syllabus should be taken as a fairly reliable guide for the course content and policies. They are, however, subject to change at the instructor's discretion. Any changes will be announced in class as well as posted on Canvas.