The University of Iowa
College of Liberal Arts and Sciences
Department of Statistics and Actuarial Science

Biostatistics (STAT:3510)
Spring 2016
4:30-5:20pm Monday, Wednesday, & Friday, LR2 VAN

▷ ***General Information***

- *Instructor:* Michelle Larson, 221 SH, 335-0814, `michelle-larson@uiowa.edu`
- *Office Hours:* 10:00-11:20am Monday, 2:30-4:0 pm Monday, and by appointment
- *TA:* Juan Cervantes, 348 SH, `juan-cervantes@uiowa.edu`
- *TA Office Hours:* 3 - 4:30 pm Tuesday, 2:30 - 4:00 pm Wednesday, and by appointment
- *DEO:* Joseph Lang, 241 SH, 335-0712
- *Calculator:* Students are strongly encouraged to use a calculator capable of performing statistical computations. In-class support will be given for students using a TI-83 or TI-84; limited help from the instructor is available for other models (e.g. TI-89, Casio models). Students will not be allowed to use calculators on their laptop, tablet, watch, or other electronic devices during exams.
- *Reference Textbook:* Pagano, Marcello and Gauvreau, Kimberlee (2000). *Principles of Biostatistics, 2nd edition*, Duxbury. (ISBN: 0534229026)
- *ICON/Web:* This course will use ICON (`http://icon.uiowa.edu`) for announcements, quizzes, homework assignments, etc.

▷ ***Course Objectives***

- In this course we will cover the following topics (in roughly this order):
  - Summary statistics, Statistical graphics
  - Probability (addition and product rules, conditional probability, Bayes theorem)
  - Random Variables and Probability Distributions (expectation, variance, Binomial, Poisson)
  - Normal distribution, Sampling distributions, Central Limit Theorem (CLT)
  - Sampling techniques (SRS, stratified, cluster)
  - Experimental design (treatment and control groups, randomization, blinding)
  - Inference for μ (σ known, σ unknown)
  - Inference for $\mu_1 - \mu_2$ ($\sigma_1 = \sigma_2$, $\sigma_1 \neq \sigma_2$)
  - Inference for p and $p_1 - p_2$
  - Type I & II errors, statistical power
  - Correlation and simple regression (including inference)
  - Inference for two-way contingency tables
  - ANOVA (time permitting)
  - Multiple regression (time permitting)
- Students will learn how to assess significance for all inferential procedures.
- Students are encouraged to use technology to perform statistical analyses described in class, however, explict work (formulas, computations, etc.) is required to be shown.

▷ ***Grading***

- *Exams:* There will be 2 midterm exams (22.5% each) and a final exam (35%). Midterms will be given during regular class time. Exam dates:
  - Exam 1: Wednesday, February 24, 4:30-5:20 pm LR2 VAN
  - Exam 2: Wednesday, March 30, 4:30-5:20 pm LR2 VAN
  - Final Exam: TBA

Students are expected to be present for the exams at the *scheduled time*. If you have a legitimate, unavoidable conflict, it is your responsibility to make the appropriate arrangements at least 24 hours in advance. If you miss an exam due to a sudden absence, email the instructor immediately. Note that during exams, students will be asked to place belongings, including electronic devices other than stand-alone calculators, at the front of the room.

- *Homework:* (10% total) Homework will be due each Wednesday *at the beginning* of lecture. Because the grader will *not* have enough time to grade each problem, a subset of the assigned problems will be graded. *Homework turned in late (including at the end of class) or illegible will be given a score of zero.* The lowest homework score will be dropped. Students are encouraged to work together on homework but work submitted must be your own. Homework must be stapled, defuzzed, be neatly written; solutions must appear in the order assigned. Be sure your name, discussion section or time, and the assignment number appear at the top of the first page.
- *Quizzes:* (5% total) An online (ICON) quiz will be given following each lecture. Students will have until the beginning of the next lecture to complete the quiz. *Make-up quizzes will not be allowed under any circumstances.* The lowest four quiz scores will be dropped. Unannounced quizzes may be given (in lecture or discussion) at any time.
- *Mini-Project:* (5% total) Students will complete an individual project of collecting and analyzing data. The project will be submitted via ICON Dropbox, no later than 5pm Friday, March 25, 2016. Detailed information will be given following the first midterm exam.
- Your attendance, participation, preparedness, work ethic, etc. may affect your grade.
- This course uses the $+/-$ grading system (i.e. grades such as `A−`, `B+`, and `B` will be assigned).
- Grade cutoffs will be no higher than the usual 90, 80, 70, 60 breakdown.
- Bonus points may be given at any time and may be applied to any part of your grade.

▷ ***Extra Help***

- Students are encouraged to seek help from their TA, professor, and/or peers. A list of *non-free* private tutors can be found at `http://www.stat.uiowa.edu/resources/tutoring`. While not specific to our class, graduate students in the *S*tatistics Tutorial Lab may also be able to assist you. Hours for the lab can be found on the previous web page.

▷ ***Notes***

- Do <u>not</u> miss class. You need to attend every day to succeed in this class.
- Please refrain from eating, using your phone, wearing earbuds, and using other electronic devices during class.
- Success in this class requires a large time commitment. A *minimum* of 10 to 15 hours per week is expected. Review/study numerous times throughout the week.
- The material in this course appears *deceptively* easy. *Frequently quizzing/testing yourself is the best, most efficient way to learn the material.* Don't memorize; try to *understand*.
- If you are absent from discussion or lecture (without giving prior notice to your TA), we can not provide handouts/notes.

▷ ***Academic Misconduct***

- During exams, you may not talk, whisper, pass notes, view other students' work, allow a fellow student to view your own work (cover your paper!), use class notes, etc. All such actions are considered academic misconduct and will be reported to the UI.
- You may, however, work with a fellow student on your homework provided you *both do all of the problems in their entirety* (at which point you can compare methods, approaches, and answers). *Simply copying a another student's homework will be considered academic misconduct.*

▷ ***The College of Liberal Arts and Sciences Policy and Procedures***

- *Administrative Home:* The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at `http://clas.uiowa.edu/students/handbook`.
- *Electronic Communication:* University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (`@uiowa.edu`). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11, `http://opsmanual.uiowa.edu/human-resources/professional-ethics-and-academic-responsibility#15.2`).
- *Accommodations for Disabilities:* A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. See `http://sds.studentlife.uiowa.edu/` for more information.
- *Academic Honesty:* All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty (`http://clas.uiowa.edu/students/handbook/academic-fraud-honor-code`): "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge (`http://fye.uiowa.edu/youre-here/iowa-challenge`). I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook, `http://clas.uiowa.edu/students/handbook`).
- *CLAS Final Examination Policies:* The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.
- *Making a Suggestion or a Complaint:* Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook, `http://clas.uiowa.edu/students/handbook`).
- *Understanding Sexual Harassment:* Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator (`http://osmrc.uiowa.edu/`) for assistance, definitions, and the full University policy.
- *Reacting Safely to Severe Weather:* In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website (`http://police.uiowa.edu/emergency-communications`).