FUNDAMENTALS OF ENGINEERING STATISTICAL ANALYSIS
ISE/DSA 5013
Fall 2017

Instructor: Kash Barker, Ph.D.
Email: OU5E.5013@gmail.com
Office hours: Google Hangout office hours will be posted in a discussion on the Janux platform

Recommended textbook:
Boca Raton, FL: CRC Press.

Other course material derived from:

Course description: This course provides fundamental concepts in probability and statistical inference, with application to engineering contexts. Probability topics include counting methods, discrete and continuous random variables, and their associated distributions. Statistical inference topics include sampling distributions, point estimation, confidence intervals and hypothesis testing for single- and two-sample experiments, nonparametric statistics, and goodness-of-fit testing. Excel will be used to demonstrate how to solve some class examples, and you'll be expected to use Excel to solve some homework problems. The statistical software package R will be introduced to address basic statistics problems and to prepare you for future coursework. Course prerequisites include calculus (differentiation and integration).

Announcements and consultation: The instructor and teaching assistant will attempt to answer questions posed to the “Let’s Connect” feature of the Janux platform (on a daily basis, or close to it). In addition, the instructor will hold regular office hours using the Google Hangouts video feature, requiring that students have a Gmail account. The Hangout can be accessed during posted office hours (https://plus.google.com/hangouts/_/g5g66i6e0e4qf2yuxm5yefnma). Substantial mathematical problems may be addressed with additional videos posted to Youtube.

For those in the Norman, OK area, the instructor will be around the OU campus for parts of the summer if you would like to make an appointment for an office visit.
**Grading:** Percentages of course grading requirements are as follows.

- Homework ............... 35%
- Term exam 1 .......... 20%
- Term exam 2 .......... 20%
- Final exam ............ 25%

There is a grade guarantee of 90% = A, 80% = B, 70% = C, 60% = D. Grades may be curved at the end of the semester, but grade boundaries will never be more severe than the grade guarantee.

**Homework:** An ability to solve statistics problems is based only partly on the final numerical answer. To receive full credit (or to receive any partial credit if the final numerical answer is incorrect), a student must demonstrate an understanding of any assumptions made, any parameters stated in the problem or otherwise assumed, any equations used to arrive at the final answer, and any insight into the problem context that is gained as a result of the final numerical answer. The topics in this course are fundamental, but the thought and effort put into the course by those enrolled is expected to be graduate level.

All assignments must be uploaded in the Janux system by the due date and time provided on the assignment. Late assignments will NOT be accepted. Ensure your familiarity with the Janux system in advance, and allot a sufficient amount of time for assignment submission and any technical difficulties that may arise.

Solving problems in this course will require notation including Greek letters, subscripts, superscripts, graphical depictions, and mathematical functions. All of these can be effectively incorporated into a word processing document that has a good equation editing function (e.g., Microsoft Word, LaTeX). If you opt to type out all homework assignments, specific notation using an equation editor MUST be used. However, using such software comes at a cost, namely time. Given the brief timeline of this course, time would be more effectively spent studying course material than learning and using equation editor functions. As such, it is expected that students will opt to work out assignments by hand with pencil/pen and paper. Submitting handwritten homework assignments will require the use of a scanner or a smart phone scanning app. Scanning apps that have been vetted by the OU Center for Teaching Excellence include: Evernote Scannable (for iOS only), Tiny Scan: PDF Document Scanner (for Android and iOS), and Genius Scan - PDF Scanner (for Android, iOS, and Windows). There are tutorials available for those taking the course for OU credit ([http://www.lynda.com/Android-tutorials/Using-PDF-scanner-mobile-apps/183383/367929-4.html](http://www.lynda.com/Android-tutorials/Using-PDF-scanner-mobile-apps/183383/367929-4.html)). Only a pdf will be uploaded (i.e., an uploaded photo of a homework assignment will NOT be accepted). A specific naming convention will be required for homework submissions, where X is the assignment number: hwX_lastname_firstname.pdf.

Homework problems should have a logical order, such that grading is intuitive. Writing should be neat. Examples of effectively answered homework problems are provided in Unit 0: Welcome to the Course. If the instructor and/or teaching assistant cannot easily understand the logical flow, the notation used, the handwriting, or any other aspect of a homework problem, no credit will be given.

Advice: don’t rest after the submission of a homework assignment. Work on assignments in advance as much as possible. There is a significant amount of material to cover in this course, and the nature of this topic requires a tremendous amount of practice (hence,
several homework problems on each assignment). Try to work ahead as much as possible. Homework solutions will be posted after the due date expires.

Examinations: Two term exams and a final exam will be given in this course. The two term exams will have a two-hour time limit, while the final exam will have a three-hour time limit. Any exams taking longer than the time limit will not be graded. The tentative exam dates are as follows:

- Exam 1 (units 1-4) ..................... October 9
- Exam 2 (units 5-7) ..................... November 8
- Final exam (comprehensive) ...... December 12

Exams will be taken through the Janux platform and must be monitored with the proctoring service B Virtual (http://bvirtualinc.com/live-online-proctoring/). B Virtual will monitor your exam taking activity via a webcam on your computer (required) in addition to monitoring your computer activity. An equation sheet will be available online (and provided in advance of the exam for study purposes). It cannot be printed out and used during exams – only the online version is allowable. No other study material will be allowed during exams. Any suspicious activity will result in a zero grade for the exam, and an academic misconduct grievance will be filed.

Exams will be open for a 24-hour window, from 12:01 AM to 11:59 PM on the examination date provided. Students must engage with B Virtual prior to taking the exam. Sufficient planning is required to ensure that the proctoring service will work in advance. Once the exam is engaged on the Janux platform, students will have two hours to complete term exams (three hours for the final exam).

Short answers and final numerical responses are to be keyed into text boxes on the Janux platform, and handwritten notes will be scanned and uploaded in a similar fashion as homework problem (e.g., notation, neatness, organization), noting that partial credit for incorrect final answers can only be given through the demonstration of knowledge with the upload of these notes. An additional 20 minutes is allotted for the scanning (with a scanner or scanning app, not a photo) and uploading of handwritten notes outside of the two hours for the term exam (or three hours for the final exam). During this additional 20 minutes, the B Virtual monitors will not allow any further work to be completed on the exam. The exam must be completed and notes uploaded within the 24-hour window, so sufficient planning is required to ensure that all material is submitted by 11:59 PM on the examination date.

Note that the Janux platform will record the time that a student retrieves the exam and when the exam is finally submitted, but the platform offers no timekeeping is provided for the student. As such, it is incumbent upon the student to monitor their own examination time and ensure that submission is timely.

For on-campus students, exams will be proctored at a time and location on campus to be announced near the examination dates. For those at an AT&T facility, exams might be proctored on-site (confirmation of this will be made near the examination).

Help with course platform: The instructor and teaching assistant will not be able to help with issues with the Janux platform or any other technology. Needs for assistance should be addressed to the NextThought Help Center.
**Academic honesty:** Cheating, plagiarism, or any act of dishonesty will NOT be tolerated. This policy applies to all parties involved in the incident. Never take credit for anyone else’s intellectual property, be it on an exam or homework assignment. This includes, but is not limited to, copying from another student’s paper, copying from a paper from a previous semester, using forbidden information on exams, and copying from published writings. Students are responsible for knowing the requirements of the Academic Misconduct Code at the University of Oklahoma, available at [http://integrity.ou.edu/](http://integrity.ou.edu/).

**Reasonable accommodation policy:** Any student in this course who has a disability that may prevent him/her from fully demonstrating his/her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

**Religious holidays:** It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays.

**Students are responsible for any changes/additions to this syllabus announced over the course of the semester.**