CE 460/560 Statistical Methods in Transportation Engineering (3 Units)
Fall 2017 Course Syllabus

Lecture time/location:
Wednesday 5:00-8:00
Civil Engineering Room 201

Catalog Description: The following course is intended to teach statistical methods in transportation engineering. The course will use data from transportation-related sources to highlight how statistical methods are conducted in the field.

Objective: Upon completion of the class, students will be able to visualize data, perform a variety of statistical tests, and create models to understand underlying trends in the data.

ABET: The Accreditation Board for Engineering and Technology (ABET) accredits the Civil Engineering curriculum at the University of Arizona. This course fits in the Civil Engineering curriculum, and satisfies ABET outcomes, as defined below and on the "ABET 2010 Criteria Course Classification Form" that is attached.

Primary ABET Outcomes
- C. Ability to design a system, component, or process to meet desired needs
- L. Pass the FE exam as the first step towards professional registration
- M. Be proficient in the major areas of civil engineering

Secondary ABET Outcomes
- A. Apply mathematics, science, and engineering principles
- B. Ability to design and conduct experiments and interpret data
- E. Ability to identify, formulate, and solve engineering problems
- H. The broad education necessary to understand the impact of engineering solutions in a global context
- K. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Instructor Information:
- Dr. Robert Kluger
  - Civil Engineering Building 324J
  - Email: klugerrm@email.arizona.edu
  - Open Office Hours: By appointment.

Textbook and Software:

Required: Washington, S.P., Karlaftis, M.G., and Mannering, F.L. Statistical and Econometric Methods for Transportation Data Analysis. CRC Press. 2003.

Optional: Maindonald, J.H. and Braun, J.W. Data Analysis and Graphics Using R. Cambridge University Press. 2003.

Required: R. Download at This Link

Required: R Studio Desktop (The free open source version!!). Download at This Link.

Grading and Assessment:

Grading Summary

	CE 460	CE 560
Quizzes	20%	20%
Homework	20%	20%
Midterms/Final	60%	60%

- **Assigned Readings.** Most lectures have suggested readings. These readings will not be directly evaluated, but it will be greatly beneficial to complete reading them on time because they provide important information for you to understand the class contents and participate in class discussions. Questions on the homework/tests may come from the assigned readings.

- **Quizzes.** At the beginning of each class, there will be a quiz. Each quiz will take 10-20 minutes and test concepts from the class before. Quizzes will be worth 20% of each student's final grade.

- **Homework.** There will be periodic homework assignments throughout the course totaling 20% of each student's grade. They may require a presentation of results to the class.

  - Working on homework in groups is permitted. However, each person must turn in a separate solution prepared by his/her own means. This means that the problem description, steps taken to solve the problem, and any computer input and output must be written by each person individually.

  - Homework Submission: You are required to turn in your homework via D2L by midnight on the due date. Late submissions will be 5% off per day totaling up to 50% of the assignment. ***Do not wait until the last minute to submit the assignments in case you experience technical difficulties!!***

  - Copying another person's work without attribution, including copying of any part or the whole of computer files or material from the Internet, is considered plagiarism. It will be prosecuted as a violation of the University of Arizona Student Code of Conduct in accordance with the Code of Academic Integrity. Both codes are published on-line at http://deanofstudents.arizona.edu/policiesandcodes/. It is the student's responsibility to be familiar with these Codes.

- **Exams.** There are two midterm exams and one final exam. All exams will be in-class and students may use any resources at their disposal, **but they must complete the exam individually**. Exam questions will be from the contents covered in lectures, assigned readings, assignments, or projects. The required data for the exam will be posted 30 minutes before the start of the exam as an assignment on D2L.

Again, cheating will be prosecuted as a violation of the University of Arizona Student Code of Conduct in accordance with the Code of Academic Integrity. Both codes are published on-line at http://deanofstudents.arizona.edu/policiesandcodes/. It is the student's responsibility to be familiar with these Codes.

D2L:
The primary source for homework, solutions, design project activities, and other course materials will be D2L. Students may access D2L through http://d2l.arizona.edu/. It is the students' responsibility to check this site regularly.

Teaching Philosophy/Tips for Success in Course:
1. Check out **D2L** for updates.
2. **Study time:** The normal after-class study time is 2 hours for a one-credit hour class. You're expected to commit 6 hours (weekly average) outside this 3-credit-hour class.
3. **Class Attendance:** Information lectured in the class cannot always be found in the assigned readings or course slides. Students are responsible for attending class.
4. Please feel free to give your instructor feedback (in person, mail, or email). Any constructive criticism is appreciated to improve future aspects of the class.

Course Policy:
1. Respect your classmates (on time and be quiet).
2. Class Attendance. You are expected to attend all lectures. If you cannot attend a specific lecture, please alert the instructor ahead of time.
    a. All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion,
    b. Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.
3. If you have any questions regarding your grade, please let me know **within 7 days** after your grade is returned. Any corrections will not be made after 7 days.
4. In addition to University of Arizona Student Code of Conduct and Code of Academic Integrity mentioned above, please also review Policy on Threatening Behavior by Students (http://policy.web.arizona.edu/threatening-behavior-students)
5. This syllabus is subject to change at the teacher's discretion. Students will be notified of any changes in advance.

Acknowledgements:
Course slides were adapted from slides provided by Fred Mannering.