

Course Number	410
Title	Applied Statistics for Civil and Environmental Engineers
Section	001
CRN(s)	14502
Credits	4
Prerequisite(s)	Junior standing in CEE, MTH 254
Days/Time	MW, 10:15am to 12:05pm
Location	EB 315
Final Exam Day/Time	<i>Final Exam is optional, June 10, 2015</i>

Course Website Log on using D2L at www.d2l.pdx.edu

IMPORTANT: The class schedule is tentative. Class announcements will be used for updates, reading assignments, homework postings, etc. It is important that you check the course website frequently.

Instructor Kelly Clifton, PhD
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Office Hours Mondays after class or by appointment
Mailbox Location CEE Office, Engineering Building, Room 201

Communication Policy Please email the instructor at kclifton@pdx.edu using your preferred email address. Use D2L discussion board for common/general questions or comments.

Required Text or Other Materials:

- Devore, Jay. *Probability & Statistics for Engineering and the Sciences, 8th Edition*, Cengage Learning: Boston, MA, 2009.

Optional Text:

- Peck, Roxy; Olsen, Chris, and Devore, Jay. *Introduction to Statistics and Data Analysis, 4th Edition*, Cengage Learning: Boston, MA 2012

Lecture material will include content from both texts and will be posted on D2L. Assignments will draw primarily from the problem sets in Devore or will be provided via D2L.

Catalog Course Description

This course will introduce students to probability distributions, hypothesis testing and regression analysis with an emphasis on formulating and solving real-world problems using software. The course will focus on civil and environmental engineering applications and problems.

Course Objectives

The main objectives of this class are:

- Introduce the student to applied probability and statistics;
- Introduce the student to statistical software and model implementation in computer environments that the students can apply now and later (MS Excel);
- Introduce the student to the formulation and testing of hypotheses and confidence intervals in CEE problems;
- Construct, estimate, and analyze linear regression models; and
- Allow students to applied probability and statistical techniques to support decision makers and communicate results in civil and environmental engineering applications.

Course Evaluation

Grades will be determined by the average of the four equally-weighted in-class exams. Students may take an optional comprehensive final. The final grade will be the higher score of the average of the in-class exams or the final exam.

90 to 100%	A
80 – 89	B
70-79	C
60-69	D
<60	F

Homework will be assigned and solutions will be reviewed in class or posted in D2L. These assignments will not be graded; however, students will be expected to complete these assignments as exam material will draw upon the assignment examples.

If you are sick do not come to class (see attached flu policy). However, you should contact the lecturer by email or phone and leave a message **in advance**. It is possible to submit assignments, presentations, papers by email (attach a document or pdf) or fax your material to the department number 503-725-5950.

IF YOU MISS AN EXAM DUE TO ILLNESS OR ANY OTHER MAJOR EVENT, YOU MUST CONTACT THE INSTRUCTOR IMMEDIATELY TO RESCHEDULE (A written justification or proof is needed in all cases).

A grade of incomplete "I" is granted by the instructor *only* with prior approval and consent. Criteria are outlined in the PSU Bulletin. Note that for Civil Engineering undergraduates the CEE Department requires that junior and senior required courses must be completed with a minimum grade of C-, and a student's cumulative PSU GPA must be 2.33 or higher to graduate from the BSCE and BSENVE programs.

Tentative Course Schedule (Timeline is subject to change)

Week	Day	Date	Topic	Readings
1	M	03/30/15	Course Overview, Descriptive Statistics, & Probability Concepts	Ch. 1 & 2
	W	04/01/15	Discrete Random Variables & Probability Distributions	Ch. 3
2	M	04/06/15	Discrete Random Variables & Probability Distributions	
	W	04/08/15	Continuous Random Variables & Probability Distributions	Ch. 4
3	M	04/13/15	Continuous Random Variables & Probability Distributions	
	W	04/15/15	Exam 1	
4	M	04/20/15	Joint Probability Distributions & Random Samples	Ch. 5
	W	04/22/15	Joint Probability Distributions (con't) & Point Estimation	Ch. 6
5	M	04/27/15	Point Estimation	
	W	04/29/15	Statistical Intervals based on a Single Sample	Ch. 7
6	M	05/04/15	Exam 2	
	W	05/06/15	Hypotheses Testing based on a Single Sample	Ch. 8
7	M	05/11/15	Hypotheses Testing (cont'd) & Inferences Based on Two Samples	Ch. 9
	W	05/13/15	Inferences Based on Two Samples	
8	M	05/18/15	Exam 3	
	W	05/20/15	Analysis of Variance	Ch. 10
9	M	05/25/15	Memorial Day	
	W	05/27/15	Simple Linear Regression & Correlation	Ch. 12
10	M	06/01/15	Simple Linear Regression & Correlation	
	W	06/03/15	Exam 4	
11	W	06/10/15	Final Exam (optional)	

Expectations of the Student

Professionalism

All assignments and class participation should be conducted in a professional manner. Attention to detail on class assignments and communication is important and is part of the learning experience and is included in part of student evaluation.

Attendance

Attendance is strongly suggested. We will do activities in class that will help in your learning of the material that cannot be duplicated outside of the classroom. If you are going to miss a class, email the instructor(s) before with a reason stating why you will miss class. If you are on the border for a grade, attendance will be taken into consideration.

Computer and E-mail Accounts

All students should activate their PSU email account (__@pdx.edu) which will allow them to use D2L. I will periodically send reminders, hints, and other notices to the class via email. Include COURSE NUMBER (CE...) and topic of your message in the subject line (be as specific as possible) when sending an email. Use proper grammar, spell check, and proof read your message. You may be required to submit some of your assignments electronically.

D2L mail is a useful way for us to remain in contact and is the best way to reach me.

All engineering students should activate their engineering computer account which will allow them to use engineering computer labs and e-mail. You should activate it *before* the day you need it. If you encounter problems with this account, see the lab attendant, or e-mail: support@cecs.pdx.edu. Please note: the CEE Department regularly sends course announcements, job information, etc. to students' CECS accounts, so if you do not check it regularly, we recommend forwarding your CECS e-mail to whatever e-mail address you use.

Ethics and Professionalism

As future professional engineers you should plan to take the Fundamentals of Engineering Exam and after the required experience, the Professional Engineering Exam (see the Oregon State Board of Examiners for Engineering and Land Surveying at: www.oregon.gov/osbeels/pages/index.aspx. You should also be familiar with the ASCE Code of Ethics <http://www.asce.org/Leadership-and-Management/Ethics/Code-of-Ethics/>, which includes the following:

Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the engineering profession.

This ethical behavior extends to any other profession or discipline, e.g. urban planning, business, mathematics, etc.

The PSU Student Conduct Code prohibits all forms of academic cheating, fraud, and dishonesty. Further details can be found in the PSU Bulletin. Allegations of academic dishonesty may be addressed by the instructor, and/or may be referred to the Office of Student Affairs for action. Acts of academic dishonesty may result a failing grade on the exam or assignment for which the dishonesty occurred, disciplinary probation, suspension or dismissal from the University. The students and the instructor will work together to establish optimal conditions for honorable academic work. Questions about academic honesty may be directed to the Office of The Dean of Student Life (<http://www.pdx.edu/dos/>).

Resources

Student Groups and Professional Organizations

Participation in student and professional groups can be a valuable part of your education experience. Membership gives students opportunities to get to know fellow students better, meet and network with professionals, collaborate in solving real engineering problems, learn about internship or job possibilities, socialize and have fun. Your fellow

students can be a great source of help and guidance in your academic endeavors. Consider becoming active with a student organization, such as the following:

- American Society of Civil Engineers (ASCE) Student Chapter : <http://www.asce.pdx.edu/>
- Students in Transportation Engineering and Planning (STEP) and Institute of Transportation Engineers (ITE) Student Chapter: <http://web.cecs.pdx.edu/~step/>
- Engineers Without Borders (EWB) Student Chapter: <http://www.ewb.pdx.edu>
- American Water Works Association (AWWA)
- Bridges to Prosperity (B2P): <http://www.pdx.edu/cee/bridges2prosperity-student-group>

Most professional organizations have monthly meetings and encourage student participation by providing discounts for lunch and dinner meetings. These meetings provide opportunities to network with potential future employers, learn about scholarships, and increasing your technical knowledge. Take a look at these organizations as a starting point:

- American Society of Civil Engineers (ASCE) Oregon Section: www.asceor.org
- Institute of Transportation Engineers (ITE) Oregon Section: www.oregonite.org
- Society of Women Engineers (SWE) Columbia River Section - www.swe-columbia-river.org
- Structural Engineers Association of Oregon (SEAO): www.seao.org

Campus Help

As a PSU student, you have numerous resources at your disposal. Please take advantage of them while you are here. A small sample is listed below:

- CEE Website (includes program info, job listings, etc.): www.pdx.edu/cee
- Career Center: <http://www.pdx.edu/careers/>
- Center for Student Health & Counseling: <http://www.pdx.edu/shac/>
- The Writing Center: <http://www.pdx.edu/professional-development/>
- PSU Disability Resource Center: 116 Smith Memorial Union ((503) 725-4150)

Note: The PSU Disability Resource Center is available to help students with academic accommodations. If you are a student who has need for test-taking, note-taking or other assistance, please visit the DRC and notify the instructor at the beginning of the term.

Campus Safety

The University considers student safety paramount. The Campus Public Safety Office is open 24 hours a day to assist with personal safety, crime prevention and security escort services. Call 503-725-4407 for more information. For Campus emergencies call 503-725-4404.

Final Notes

- The syllabus is subject to change at the discretion of the instructor as course or other circumstances requires.
- Students with documented disabilities are encouraged to discuss with me arrangements that will enhance their learning in this class.
- Please feel free to discuss with me problems/concerns with your other classes. Students with any kind of problem should contact the instructor as soon as possible.