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| Instructor: | Geza Bottlik, E-mail: bottlik@usc.edu |
| Office Hours: | Tuesday/ Thursday 1:00 P.M. – 1:45 P.M. by appointment or zoom |
| TA | Zhengqi Wu, zhengqiw@usc.edu  |
| TA Office Hours: | 12:00 P.M. – 1:00 P.M. [https://usc.zoom.us/j/98016216583](https://urldefense.com/v3/__https%3A/usc.zoom.us/j/98016216583__;!!LIr3w8kk_Xxm!_bzSDh5f5xZf6JB5nKL85OljS1nUnp-dgva7K6CShA_w1mD4TVAaHnrnpf5TUjk$) |
| Class time/place: | Tuesdays/Thursdays 5:00 P.M. – 6:20 P.M., RTH115 |

**Test Schedule**:

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| Midterm 1: | Tuesday, February 8, 2022 | 5:00 P.M. – 6:20 P.M |
| Midterm 2: | Thursday, March 10, 2022 | 5:00 P.M. – 6:20 P.M |
| Final: | Thursday, May 5, 2022 | 4:30 P.M. – 6:30 P.M. |

Web Page: **www.**gezabottlik**.com**

 At the site you will find:

1. The syllabus, grades, résumes, Lecture Notes
2. Assignments and due dates, solutions

 Your responsibility:

1. Register on the site and learn how to use it
2. Download the lecture notes and assignments for each class
3. Review and verify your grades to track your progress and standing in the class.

The DEN website (D2L, courses.uscden.net) is only used for e-mail, the discussion board and assignment upload and return. Check your email on a regular basis. Session recordings will be available on DEN

Required Texts:

Jay L. Devore “Probability and Statistics for Engineering and the Sciences “, 8th Edition, Brooks/Cole, 2009, ISBN-13:978-0-538-73352-6

Schmuller, Joseph “Statistical Analysis with R for Dummies”, John Wiley and Sons, 2017,
ISBN-978-1-119-33706-5

References:

Andrie de Vries and Joris Meys, “R for Dummies”, 2nd Edition, John Wiley and Sons, 2015,
ISBN 978-1-119-05580-8

Sheldon M. Ross “Probability and Statistics for Engineers and Scientists”, 4th Editions, Academic Press, 2009, ISBN 13:978-0-12-370483-2

Roger B. Myerson “Probability Models for Economic Decisions” , Thomson Brooks/Cole, 2005 ISBN 0-534-42381-7

Raiffa, Richardson and Metcalfe “Negotiation Analysis”, by, Harvard University Press, 2002 ISBN 0 – 674 – 008890 –1

Robert L. Winkler “An Introduction to Bayesian Inference and Decision”, 2nd Edition, Probabilistic Publishing, 2003

John K Kruschke “Doing Bayesian Data Analysis”, Academic Press, 2011

**Assignments:**

Readings and Problems will be included in each week’s assignments. Problems are assigned on Tuesday and are due on the following Wednesday at midnight, submitted through the assignment manager on D2L and will be returned electronically before the next week if points are deducted. Solutions will be posted after the assignment is due. Reading assignments are due when the material will be covered in class. It is imperative that you **prepare for class** -- you will find it extremely difficult to follow the discussion if you have not read the material.

I will **not accept** late homework. Homework is to be done in the Excel file provided on D2L. Do not type results into the spreadsheet – use formulas. Follow all instructions – the homework is autograded for correct answers and then graded for partial credit, if necessary. You must name your file as follows: The part of your email before the @ sign\_HW (or Quiz)\_the number of the item. Example: bottlik\_HW01. Essays written in word must be copied into the excel file as a bitmap or similar object.

Homework is to be done individually unless it is a team assignment. It is OK to work on homework together. If you discuss or collaborate on a homework, you must indicate that in your file. Each person must turn in a separate homework. Do not give your file to anyone, or use someone else’s file. Generated data and essay questions must be unique to each person. **If the answer is given in a book or previous homework, don’t just copy it, explain how you got it.**

**Attendance Requirements during online courses**

You should attend synchronously if the class time falls between 7 A.M. and 10 P.M. in your time zone. You may be excused from watching synchronously for a valid reason, obtained before class. If you do attend asynchronously, you need to send me an email after having watched, so that I know that you have attended and can be given credit.

**Objectives of the course**

The major objective of this course is to have you understand, interpret and verify the results obtained from statistical analyses and make appropriate decisions based on them. Secondly, given a situation or problem, you will learn which statistical tools are the appropriate ones to assess the problem or situation.

This course is intended to train future engineering managers in the most commonly used statistical methods in decision making with partial information in an uncertain environment. Such decisions include (i) data analyses that are appropriate for generating information useful in decision making and (ii) a framework for analyzing decisions based on partial information.

 The specific course objectives include enabling the student to:

 Use Excel, VBA and R

 Be familiar with the basics of decision making

 Understand the importance of statistical analysis in managerial decisions.

 Understand the importance and limitations of data gathering

 Use statistical tools in decision making.

 Interpret the outcome and meaning of statistical information.

 Understand the limitations of the use of statistical methods

 Have knowledge of the use of statistical tools in contemporary management

**Grading:**

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| Homework, 1.5 points each | ~18% |
| Midterm 1 | ~12% |
| Midterm 2 | ~21% |
| Final exam | ~29% |
| Quizzes, 1.5 points each | ~15% |
| Participation (attendance for DEN students must be verified by email to the professor after viewing, postings on the discussion board, attendance at live session by Webex) 0.2 points | ~5% |

The grade for the course will only be based on the required work listed above and **cannot** be improved with additional work.

Grades are based upon your personal comprehension of the material and your performance on the exams and assignments relative to the other students. The quality of your fellow classmates as students is expected to be quite high and the expectations of the instructor are established accordingly.

**Quizzes:**

 There will be a quiz most weeks due online at midnight on Wednesday or Friday. The format is mostly True/False. The purpose of these quizzes is to encourage you to keep up with the class material. I anticipate that you will have little difficulty in answering the questions if you are up to date on the class materials, including those for the next class. The quiz each week will be based primarily upon two subjects: the material from the previous week and the reading assignment for that week. You are expected to have read the weekly assignment prior to the start of class. The quizzes are open notes, book and laptop and on line.

**Examinations:**

The midterms and final exams are open book and open notes. Calculators are OK but laptops are required. Exam problems will be both numerical and essay, with occasional true/false, fill in the blank, or multiple choice and are to be done in Excel on the provided file.

**Course Outline**:

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| (Week 1) Introduction and overview, Why Statistics? |
| (2) Decision Making (Material provided from Raiffa) |
| (3) Decision Making, Descriptive Statistics Chapter 1  |
| (4) Probability Chapter 2, Review |
| (5) Midterm 1, go over midterm, Distributions  |
| (6) Distributions Chapters 3 and 4 |
| (7) Confidence, Sampling and decision-making Chapters 5,8 and 9 |
| (8) Confidence, Sampling and decision-making Chapters 5,8 and 9 |
| (9) Review, Midterm 2 |
| (10) Regression Chapter 12, 13 |
| (11) ANOVA Chapter 10, 11 |
| (12) SPC |
| (13) Acceptance sampling |
| (14) Bayesian Analysis Material from Winkler and Krischke |
| (15) Bayesian Analysis Material from Winkler and Krischke, Review |
|  Final .May 5, 2022 4:30 P.M. – 6:30 P.M. |

**Expectations:**

Students are expected to attend every session, be on time, to have read the preparation material and participate actively in the discussions in the class. Students are also expected to post comments and questions on the discussion board (or send emails or contributions to be used in class). You should be prepared to devote the time necessary to take the course. The course material is cumulative and you need to keep up as we go along.

**ALWAYS BE SURE TO GIVE THE SOURCE OF ALL YOUR INFORMATION. ANYTHING TAKEN VERBATIM FROM SOMEONE ELSE MUST BE IN QUOTATION MARKS AND REFERENCED. THIS INCLUDES PARTIAL SENTENCES.**

This is intended to be an interactive class and your participation should increase as the semester progresses. Attendance at all classes is expected of everyone. Frequent absences will result in a reduction in grade. Punctuality is expected. If you are late, be sure not to disturb the class as you log in.

The midterms and final will be based on problems similar to the ones assigned in the homework and the discussions in class. They are generally shorter but do require some thinking. **All tests are open book and open notes. Laptops or desktops are required**. Students are expected to **apply** what they should have learned up to that point to analyzing situations, identifying the problems and applying the appropriate techniques to solve them.

**NEATNESS, SPELLING, AND GRAMMAR COUNT. THEY ARE AN EXPRESSION OF YOUR COMMITMENT TO DO A GOOD JOB.**

**Last, but most important:**

**Academic Conduct:**

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

**Support Systems:**

Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086 Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime. Provides overall safety to USC community. dps.usc.edu