EECS 461 Probability and Statistics
Fall Semester 2022
Assignment **#1** Due **30 August 2022**

Reading: EECS 461 Syllabus plus "A Message to Students from the Authors" (p. xi) and Chapter 1 in Yates/Goodman

Do all of the Quizzes in the Reading assignment (including Quiz 1.7 on MATLAB), but do *not* hand them in. Answers to the Quizzes are on the book's website (search Yates Goodman Wiley)

The following questions are intended to ensure that you have read and understood the information in the course information sheet (syllabus) that was handed out on the first day of class (the syllabus is also posted on Canvas).

1. Send an email message to me with "461 your_last_name" in the subject line. You may include any questions that you might have, but do *not* include your answers to any of the other questions/problems of this assignment *or* of Assignment 0; those answers must be turned in on paper on the due date.
2. Where is my office and what are my office hours?
3. Suppose you have the following scores -- what will your course score be?

   Homework Average: 85%
   Quiz Average: 75%
   Midterm Exam: 65 out of 80 possible points
   Final Exam: 96 out of 120 possible points

4. If you have a course score of 90 Course Points (out of the 102 possible), will you get an A- for the course?
5. What material are you allowed to bring to exams? What material will be provided to you?
6. What must you do if you will not be able to attend one of the exams?
7. How will you get solutions for the weekly homework assignments?
8. What will we do during the Monday afternoon discussion sessions?
9. What are the dates (some tentative at this point) for the Midterm Exam and the Final Exam? It would be a good idea to put them on your calendar/planner/phone *now*.

The following questions are on the reading assignment for this week. For book problems, note that Problem X.Y.Z indicates that the question has to do with material from chapter X, section Y.

10. What is the main message that you got from "A Message to Students from the Authors"?
11. Problem 1.1.2, p. 29 in Yates/Goodman.
12. Problem 1.2.2, p. 30. For parts c, d, f, and g, give an explanation in addition to the yes/no answer.
13. Problem 1.2.6, p. 30. Note that the sample space is uncountably infinite. To make your life easier, make each partition consist of just 2 outcomes (sets). Give a word description of how the partition might be useful. For example, if we are interested in determining that neither resistor value is too

high, a partition could be $A_1 = \{\ R_1 < 100,\ R_2 < 100\ \}$ and $A_2 = (\ R_1 \geq 100\ \} \bigcup \{\ R_2 \geq 100\}$. You may not use this example as one of your 4 partitions.

14. Problem 1.3.6, p. 31.

15. Problem 1.3.10, part (a) only, p. 31.

16. Weather forecasters throw around rain probabilities like crazy. Let A represent the event that it rains tomorrow and B represent the event that it rains the next day. Suppose $P[A] < P[B]$ and $P[A] \geq 0.5$.

    a. What are bounds on $P[A \bigcup B]$ and on $P[A \bigcap B]$? Show/describe how you obtained your bounds. You may want to use Venn diagrams.

    b. Suppose your local weather forecaster predicts rain tomorrow with 85% chance and rain the day after with 90% chance. What are bounds on the chance of rain BOTH days? What are bounds on the chance of rain EITHER day?

17. Problem 1.4.2, part (a) only, p. 31.

18. Problem 1.4.4, p. 32.

19. Problem 1.5.2, p. 33.

20. Problem 1.6.2, p. 33.

21. Problem 1.6.6, p. 33.

