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| New York City College of Technology | Mathematics Department Office: N711  |
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# MAT 1372-D557 Statistics with Probability (3 cr, 4 hr) Fall 2016

## **Course Meetings:** TuTh 2:15PM - 3:55PM (N420A) **Email:** ehalleck@citytech.cuny.edu

## **Instructor:** Ezra Halleck **Phone:** (718) 260-5931

## **Office Hours:** MW 2:30-3:30 and by appt **Office:** N726

**Texts:**

1. *Introductory Statistics* 3e by Sheldon Ross (required)
2. *Statistics with Microsoft Excel* 5e by Beverly J. Dretzke (optional)

**Computer software:** Course will use of MS Excel and R programming: please save your files to a USB memory stick or online (e.g., dropbox).

**Course Description:** Topics include sample spaces and probabilities, discrete (Binomial, Poisson) and continuous (Normal, Student, Chi-Square) probability distributions, expectation and variance, confidence intervals, hypothesis testing, and correlation and regression.

**Co/Prerequisite:** MAT1375

**Student Learning Outcomes:** At the end of the semester, students will be able to

1. collect, organize and graph raw data.
2. compute statistical parameters (mean, median, mode, average deviation, variance, and standard deviation).
3. create grouped frequencies distributions, probability distributions, histograms as well as identify bell-shaped distributions (Normal, t-distribution) and non-bell shaped distributions (Chi-square).
4. assign probabilities to events using counting methods, conditional probability and discrete distributions.
5. find the least squares regression line and estimate the correlation
6. determine if the data supports a hypothesis to a given level of significance using known distributions
7. create a contingency table and determine whether the variables are independent
8. use spreadsheet software to assist in creating distributions and testing hypotheses.

**Attendance:** You may miss no more than 3 classes. Lateness between 5 and 40 minutes counts as 1/2 absence. Once in class, stay for the full period; if you *leave early* without making prior arrangements, *you will be marked as absent*. Students with excessive absences who fail will receive a WU grade if they have attended the course at least once. This includes students who stop attending without officially withdrawing.

**Cell phones:** Please turn *off* orplace on *vibrate* and out of sight.

**Academic honesty:** You are encouraged to work in groups on homework, but be able to explain *anything* you turn in. During an exam, showing someone else your work is cheating; you will be treated in the same way as the person who copies. It is your responsibility to cover your work.

**Set enough time aside each week:** You are expected to spend 4-6 hours outside the classroom each week reading the text, working on projects, doing homework and preparing for exams.

***Time* problems?** Here is a **damage control priority list:**

1. *Read the section prior to the class in which it is covered.* This reading will facilitate your understanding and participation in class. In fact, while the instructor reviews homework and attendance is taken, you will be working on questions from the reading, which will form the basis for group discussion.
2. *Attempt at least some of the homework problems immediately after class,* so that you know how much of the class you understood.
3. *Take advantage of office hours:* If you are unable to attend the scheduled hours, make an appointment.
4. *Make use of the Atrium & Voorhees Learning Centers (approximately 9AM-8PM, M-Th, shorter hours on F & Sat):* While some of the tutors are advanced undergraduate students, many are adjunct faculty.

**Grade components**

**Daily writing assignment (10%):** based on the reading for that day and any material discussed in the previous class. This will also serve as attendance. It will be posted on the board 5 minutes prior to the beginning of each class. Each assignment will be scored on a 5-10 scale, 5 for a serious effort and 10 if all the aspects of the assignment are addressed.

**Online participation (10%):** **To receive credit, you must provide a link in blackboard to each of your posts or comments in the appropriate content area.** You will receive between 2 and 4 points for each item below (2 = perfunctory participation, 3 = significant thought & effort, 4 = deep thought & excellent effort). **NOTE, you will be making a total of TWO postings**, all other contributions are comments on other postings.

1. Join the openlab and make a posting by **Sa 9/24** explaining how statistics and probability relate to your career (include a photo of yourself with an aspect of mathematics and/or your career in the background).
2. Make a 2nd posting by **Sa 10/15** focusing on a graph which appears in a newspaper. You must include a short summary of the newspaper or magazine article, a reproduction of the graph and a description of how the graph was used in the article. Make sure that you have provided a link to the original article so that students can easily find it.
3. You will be paired with another student. By **Sa** **11/5**, comment on and make suggestions for improvement on the other student’s posting as well as create a word problem based on his/her graph.
4. By **Sa 11/26**, respond to the comment by editing your original post (please acknowledge the change as a comment to the comment). Solve the word problem that your partner has created.
5. Finally, by **Sa 12/10**, comment on your original posting on blackboard, summarizing your overall experience in the course and writing once again on how you think statistics relates to your career.

**Book homework (10%):** You received separately a *list of problems*. It is posted on the openlab as part of this syllabus. The sheet in the math department office and the department’s website is **not the same**. Try to do most work directly in Excel, using a separate tab for each problem. You will submit homework assignments to Blackboard electronically. You may on occasion need to scan diagrams. **No late submissions permitted.**

**Webwork (10%):** Consider these to be online quizzes. Each student gets a unique set of problems.

**Scatter plot project (20%): plan (group, 5%), report (individual, 10%) and presentation (group, 5%)**

* The instructor will provide a list of suggested topics/sources, but each group of 3 or 4 students is encouraged to find its own topic. Use group discussion time to find members you can work with in the class.
* To ensure an interesting selection of oral presentations, the instructor must personally approve your topics.
* Focuses on data with 2 numerical components, e.g., weight vs. height or hours studied vs. exam score. You plot the data as points on a Cartesian coordinate system to get a **scatter plot**. A best fit line to the data is found and added to the plot. How close the data is to the line is **correlation**.

**Midterm Exam (15%):** A sample exam will be posted on the openlab two weeks prior to the exam. Anyone who misses an exam with a documented medical or family emergency may arrange to take a makeup exam to be completed 2 class days after returning. The exam will be given outside of the normal class time and an automatic 10 point deduction is applied, e.g., a score of 70 would be lowered to 60.

**Final Exam (25%):** A sample exam will be posted on the openlab two weeks prior to the exam. If you miss the final exam and have been failing the course, you will receive a WU or F. Otherwise, if you have a documented illness or emergency, you will have opportunity to take a makeup final exam (small fee).



**Grade scale:**

93 – 100 A 77 – 79.9 C+

90 – 92.9 A- 70 – 76.9 C

87 – 89.9 B+ 60 – 69.9 D

83 – 86.9 B 0 – 59.9 F

80 – 82.9 B-