|  |  |
| --- | --- |
| New York City College of Technology | Mathematics Department Office: N711  |
| The City University of New York | (718) 260-5380 (718) 254-8537 fax |

# MAT 1372-D557 Statistics with Probability (3 cr, 4 hr) Fall 2017

## **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)
3. <https://openstax.org/details/introductory-statistics> (supplementary)

**Computer software:** MS Excel and R programming: please save files to a flash drive 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:** Daily quizzes at the beginning of class should motivate you to arrive on time. If you leave early without getting approval PRIOR to the start of class, your quiz score will not count & you will be marked as absent. If at any point, I observe you doing activities (email, texting, games, movies, assignments from other classes) not relevant to the class, your quiz score will not count & you may be asked to leave the classroom.

**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, watching videos, working on projects, doing homework and preparing for exams.

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

1. *Read the section and/or watch the assigned videos prior to the class in which it is covered.* They will facilitate your understanding and participation in class and will frequently be part of the daily quiz.
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 undergraduate students, many are adjunct faculty.
5. The math dept. often arranges for advanced math students to provide tutoring. Stay tuned for more info.

**Grade components**

**Daily quiz (10%):** based on the reading for that day, any material discussed in the previous class and homework from the previous section. This will also serve as attendance.

**Online participation (10%):** **Use first name, last initial for screen name, e.g. JimP, if your name is Jim Poe.** Your grade will be 2 for perfunctory, 3 for significant, 4 for deep thought & effort.

**NOTE, you will be making exactly TWO postings**; all other contributions are comments on other postings.

1. Join the openlab and make a posting by **Sa 9/23** 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 10/14** 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.
3. By **T 10/17**, you will be paired with another student. By **Sa** **11/4**, 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 11/25**, respond to the comment by editing your original post (please acknowledge the change your edit). Solve the word problem that your partner has created.
5. Finally, by **Sa 12/19**, 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*. Try to do most work directly in Excel/R, using a separate tab for each problem. During the daily quiz, I will come around and mark your homework.

 **0 (little done), 1 (1/4 done), 2 (1/2 done), 3 (3/4 done), 4 (completed), 5 (completed and correct).**

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

* I 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, I must approve your topic.
* Focus should be 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**.
* No credit will be given for a report if shared. FOR YOUR OWN PROTECTION, do not show your report or draft to the other members in your group. In contrast, computer work and graphs can and should be shared.
* When doing your presentation, make sure that every member of your group speaks for roughly the same amount of time. Minimize what appears on each slide and orally provide narrative and fill in missing info.

**Portfolio (10%):** In a 3-ring binder, make separate sections for quizzes, homework and class notes. Also, have all your electronic work organized on a flash drive or online. During each exam, the instructor will come around to make sure that you have all your work for the class organized.

**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-