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| New York City College of Technology | Mathematics Department Office: N711  |
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# MAT 1372 Statistics with Probability (3 cr, 4 hr) Fall 2018

## **Course Meetings:** D558: MW 4:00 – 5:40PM (N922) **Email:** ehalleck@citytech.cuny.edu

 D557: TTh 2:15 - 3:55PM (N420A)

## **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:** Mostly R and some Excel: 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.

**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:

* 5% class participation (including openlab)
* 20% Scatter Plot Project (will be scaffolded over most of the semester)
* 20% R programming (including but not limited to completion of datacamp courses)
* 30% Best 2 out of 3 midterm exams
* 25% final exam

**Openlab (part of class participation 5%):** **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 9/8** 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 10/6** 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. You will be paired with another student. By **Sa** **11/3**, 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 12/1**, respond to the comment by editing your original post (please acknowledge the change in your edit). Solve the word problem that your partner has created.
5. Finally, by **Sa 12/8**, 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.

**Scatter plot project (20%): [report (individual, 15%) 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.

**Quizzes**: There will be a short quiz at the beginning of class based on the material from the previous session. These quizzes will be self-corrected and are mainly meant to provide you feedback as to how you are doing in the course. The quiz problems will be based on problems from the following material presented in class and homework problems listed in the course [schedule](https://openlab.citytech.cuny.edu/halleckmat1372fa2018/files/2018/08/sched1372.xlsx).

A complete set of attempts (done in pencil) and corrections (done in ink) carefully put together and organized (be sure to put your name, session day, date and topic on each sheet) earns you 10% bonus on your next midterm exam provided that you have missed no more than one class in this period with one additional late <20 minutes (or 2 lates without an absence) and submit the packet at the beginning of the exam in question. If you miss a class or are late, you are responsible for getting the problems from the quiz from a classmate, with the exception of the quiz prior to the exam in question, which you can get from the instructor via email.

**Exams:**

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| **Test** | **Date for TTh section** | **Date for MW section** |
| **1** | Thursday,September 27 | Monday, October 1 |
| **2** | Thursday, October 18 | Wednesday, October 24 |
| **3** | Tuesday, November 20 | Monday, November 26 |
| **Final** | Thursday, December 20 | Wednesday, December 19 |

* Latecomers will not receive extra time.
* *No make-up tests will be given*. If you miss a test, that will be the one which is not used in the grade calculation. Any student who misses two tests should seriously consider dropping the course.
* No sample exams will be given for tests. YOUR DAILY QUIZZES carefully organized, studied and solved will serve this purpose.

**Midterm grade (P, BL, U):** will be written on your Second Exam when returned to you in class on Tuesday, Oct 23 and Monday, October 29. The last day to withdraw with a W is Tuesday, Nov 6.

**Prefinal Grade:**

* Provided 1 week prior to the final exam broken down by component.
* It is up to you to verify the accuracy of this report. In particular, be sure to keep all the material from the course until the final grade has been determined, this includes quizzes and exams.