

Math 117Q Fall 2018 Syllabus

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Text: Elementary Statistics, 11th, 12th, or 13th edition, by Mario F. Triola

Software & Materials: R statistics software (free at www.r-project.org),
Microsoft Excel, and a calculator (recommended models:
TI-83, TI-83+, TI-84, TI-84+, or TI-Nspire)

Course Content:

With a focus on applications of classic statistical methods in the natural sciences, this course will cover visual displays of data, elements of experimental design, measures of central tendency and of variability, classification of data, counting, probability, Chebyshev's Theorem, normal distribution, binomial distribution, Central Limit Theorem, hypergeometric distribution, Poisson distribution, Confidence Intervals, Hypothesis testing (means, proportions, variances), Simple linear regression and correlation, Analysis of Variance (one way), Chi Square Tests (Goodness-of-fit, Contingency Tables), Nonparametric methods (Wilcoxon [for independent samples], Kruskal Wallis, Spearman's ρ), as well as practical training in using both R and Excel for data processing and analyses. Emphasis is on inference.

Goals:

Broadly, students should become good consumers of information through their gained knowledge about statistics; become competent in the processes of statistical analysis and inference; and become proficient at doing these things using a variety of tools (e.g., R and Excel). More specifically, students should be able to:

- Categorize data sets;
- Correctly work various simple probability problems;
- Articulate the role of certain functions in statistics;
- Describe major misuses of statistics;
- Recognize several distributions and characterize them;
- Analyze interval data using statistical tests involving means, proportions, medians, rankings, and variances as appropriate;
- Interpret relationships in bivariate data;
- Discuss the difference between parametric and nonparametric statistics in relation to inherent assumptions of the general statistical model;
- Interpret the role of statistics in analyzing data and in inference;
- Recognize and explain the limitations of statistics;
- Interpret statistical findings in relation to the situation from which the data was drawn;
- Describe the experimental nature of mathematical statistics;
- Draw inferences using the vocabulary of statistics;
- Conduct basic data processing and statistical analysis using both R and Excel.

Grading:

Grades will be determined by student performance on quizzes, tests, projects, and a comprehensive final exam, as follows:

Class quizzes (2 @ 25 pts each)	50 pts
Tests (4 @ 100 pts each)	400 pts
Projects (2 @ 50 pts each)	100 pts
Lab assignments and/or quizzes	250 pts
Final exam	200 pts
Total:	1000 pts

In general, a 10% scale will be used to determine letter grades (e.g. A's for scores of 900 or above, B's for scores between 800 and 899 points, etc.) Exact cut-off scores for +/- grades will be determined by the distribution of totals for all students, and at the discretion of the instructors.

Tests and Final Exam:

Tests will be given during class time on the dates indicated on the class schedule provided online. Students may use their calculators for certain portions of tests, experiments, and the final exam, as indicated by the instructors. Students are expected to take tests at the scheduled times. If a legitimate reason exists for missing a test – as determined by the instructor – then the test must be taken prior to the regularly scheduled date. In the unusual circumstance where taking the test early is not possible, the percentage grade earned on the final exam will be used as the missed test grade. Students must provide written documentation in advance of any special accommodations required for testing. This includes additional time or other needs.

The final exam will include material selected from the entire course and will be given at the time designated on the college's final exam schedule. Students must obtain the permission of the Senior Associate Dean of academic affairs to take a final exam earlier or later than scheduled. Permission is normally granted for documented family emergencies, documented medical reasons, or for participation in educational programs. Permission will also be granted for students scheduled to take three exams on a single calendar day (not three exams within a general twenty-four-hour period). Students with three exams on one calendar day must document their situation with the Senior Associate Dean no later than 5:00 p.m. on Reading Day. Students in this situation will be granted permission to work with one of their instructors to arrange to take one of their exams at an alternate date and time within the official exam week. Leaving early for rides or flights, vacations, relatives' or friends' weddings or graduations, jobs, or having two exams on one day, and other situations, are not considered valid reasons to request an earlier or later exam date.

Class Quizzes, Lab Assignments and/or Quizzes, and Projects:

Class quizzes will focus on traditional statistics content, while lab quizzes will focus on how to use R and Excel in statistical contexts. Lab assignments and/or quizzes will happen almost every week. Most quizzes will be short 5 to 10 minute quizzes, while some will be more substantial.

Projects are intended to not only reinforce the basic statistical concepts taught during class, but also to engage students with processing data and doing statistical analysis in the contexts of R and Excel. They will be due on a date and time that will be specified online.

In general, late projects will not be accepted and make-up quizzes will not be offered. This policy will be waived only in an "emergency" situation at the instructor's discretion, and only after any documentation the instructor requires has been provided.

Homework:

Homework problems will not be collected but are assigned to benefit the student. Each student should work the problems in the materials provided online as well as any additional ones assigned from the text. To do well, the average student should plan on studying and doing practice problems for about 3 hours outside of class for each class meeting held. Preparing projects and reviewing for tests will require more time.

Attendance:

Students are responsible for all work covered in class. They are expected to attend all classes and be present for all scheduled tests. Any conflicts should be brought to the instructor's attention as soon as possible.

Finding Help:

- There is a class conference on Canvas and a related class website at

<http://mathcenter.oxford.emory.edu/site/math117/>

Students should consult both of these resources frequently for announcements about test and quiz dates, project due dates, office hours, SI sessions, homework assignments, class notes, review material, etc.

- Office hours will be announced by the instructors. Students can use this time to come by and ask specific questions related to this course and/or homework problems. In addition, students may email instructors.
- There are SI (Supplemental Instructor) student leaders attached to this course that will schedule review sessions each week. These sessions are optional, however each student is encouraged to pick one of the times per week and attend regularly. Note, students who attend SI sessions on a regular basis generally end up performing better in the course.
- Student tutors are available for one-on-one assistance with the material in the Math Center in Pierce Hall.
- Study groups organized by students have historically been very beneficial, as well. To be effective, meetings should be scheduled weekly and should be part of a regular weekly routine.

Special Accommodations:

The Office of Accessibility Services (OAS) works with students who have disabilities to provide reasonable accommodations. In order to receive consideration for reasonable accommodations, please contact the OAS and complete the registration process. Faculty may not legally provide you with accommodations until an accommodation letter has been processed and discussed with them; accommodations do not start until this point and are not retroactive. Students registered with OAS who receive a letter outlining specific academic accommodations are thus strongly encouraged to immediately coordinate a meeting with their professors to discuss a protocol to implement accommodations that will (or may) be needed over the course of the semester. This meeting should occur as early in the term as possible. Contact Megan Bohinc in OAS for more information at (770) 784-4690 or oas.oxford@emory.edu

HONOR CODE (see <http://oxford.emory.edu/catalog/regulations/honor-code.html>)

THE HONOR CODE APPLIES TO ALL WORK SUBMITTED FOR CREDIT TOWARDS YOUR GRADE. ALL HAND-WRITTEN WORK WILL BE PLEDGED TO BE YOURS AND YOURS ALONE THROUGH YOUR SIGNATURE. PROJECT WORK WILL BE PLEDGED TO BE THE WORK OF ONLY YOU AND AN IDENTIFIED PARTNER (WHEN APPLICABLE) UPON SUBMISSION ONLINE.

Note: Student work submitted as part of this course may be reviewed by Oxford College and Emory College faculty and staff for the purposes of improving instruction and enhancing Emory education.