

STA115 Recommended Schedule and Required Dates

Textbook: Moore, David S. & Notz, William I (2017), *Statistics: Concepts and Controversies*, 9th Edition, W. H. Freeman and Company.

Course Design: STA115 is designed as an introduction to statistical concepts with a minimal amount of work expected in mathematical calculation. Instructors should pay particular attention to the presentation level in the textbook and not try to exceed the mathematical calculations presented there. Students are expected to focus on concepts, especially the presentation of data, statistical summaries, use of confidence intervals, and the use and misuse of statistical tests. Under no circumstances should students be expected to calculate any statistic by hand unless taught in the textbook. Students may be introduced to more complex calculations as part of the lectures and presentations, but it should not form part of their homework or exams.

A suggested schedule is presented here. Chapters 9 and 16 can be considered optional.

Suggested Schedule

Date	Topic	Chapter	Date	Topic	Chapter
25-Jan	Data Sources	1	18-Mar	<i>SPRING BREAK</i>	
28-Jan	Samples	2	22-Mar	Correlation	14
1-Feb	Samples	3	25-Mar	Regression and Prediction	15
4-Feb	Sample Surveys	4	29-Mar	Thinking About Chance	17
8-Feb	Experiments	5	1-Apr	Probability Models	18
11-Feb	Experiments	6	5-Apr	Simulation	19
15-Feb	Data Ethics and Measurements	7,8	8-Apr	Exam or Quiz	
18-Feb	Exam or Quiz		12-Apr	Expected Values	20
22-Feb	Graphs	10,11	15-Apr	Confidence Interval	21
25-Feb	Summary Statistics	12	19-Apr	Sampling Distribution and the CLT	21
1-Mar	Summary Statistics	12	22-Apr	Hypothesis Tests	22
4-Mar	The Normal Distribution	13	26-Apr	Hypothesis Tests	22
8-Mar	The Normal Distribution	13	29-Apr	Two Way Tables	24
11-Mar	Exam or Quiz	13	3-May	Use and Abuse of Inference	23
15-Mar	<i>SPRING BREAK</i>		6-May	Extra Day in Spring	

Required Components

In order to provide adequate feedback to the students, it is required that students have homework sets or quizzes that are graded and returned on the average of every two weeks. It is suggested that 10 homework assignments or quizzes be the target. In addition, a significant quiz or exam must be completed by the end of the fifth week, a full exam by the end of the seventh week, and an additional significant quiz or exam by the eleventh week.

Required Dates S2018

End Week 2	4-Feb	First PSET
End Week 5	18-Feb	First Exam or Quiz
End Week 7	8-Mar	At least one Exam Completed
End Week 11	15-Apr	Final In-Class Exam or Quiz

TCNJ and Course Rules

The course is expected to meet for the full time each class period and to the end of the semester. Some of the class time can be used to engage students in problem solving, either in small groups or individually, as this has been shown to enhance learning.

Exams in the last week of class are limited to 15% of the total grade and the graded exams must be returned to the students by the first day of reading period to allow students to learn from any mistakes. The final exam must take place during the exam period, and students must be permitted to use the full 170 minutes of allotted exam time.

The final exam should count for no more than 30% of the final grade. We would prefer the following guidelines:

Two – Three In Class Exams	25 – 50%
Final Exam	20 – 30%
Homework Assignments	10 – 20%
Projects	20 – 30%
Short Quizzes (OPTIONAL)	10 – 20%

Projects are a particularly good way to involve students in statistical thinking and to get them working in teams, so we expect projects to be included in STA115 classes. Projects that have been successful in this class include 1) designing, conducting, and analyzing a survey of TCNJ students or 2) finding and critiquing statistical statements in the popular press and presenting these to their classmates.

Classroom Policies

In this class, the deep learning outcomes associated with TCNJ's 4th hour are accomplished by a series of rigorous educational assignments and projects that extend beyond the typical scheduled class time. These include learning to use statistical analysis tools in Excel and group work on projects during the semester. In addition, it is expected that many students will require additional time with tutors during the semester to develop the skills needed to apply the statistical concepts learned.

Attendance: All students are expected to attend all classes and are responsible for all information provided. A student who is absent for a test will not be permitted to make up the test unless prior arrangements with the instructor have been made. Approval for missing a test will only be permitted in exceptional circumstances. In the case of illness, a doctor's note will be required. Please view TCNJ's attendance policy at <http://policies.tcnj.edu/policies/digest.php?docId=9134>

Academic Honesty: Please make sure you are familiar with TCNJ's academic integrity policy. Any suspected violation of this policy will be confronted in the strict accordance with the policy: <http://policies.tcnj.edu/policies/digest.php?docId=7642>

Americans with Disability Act Policy:
<http://policies.tcnj.edu/policies/digest.php?docId=8082>

Final Exam-Evaluation-Reading Days Policy:
<http://policies.tcnj.edu/policies/digest.php?docId=9136>

Learning Goals

This course introduces the students to statistical ideas and concepts with an emphasis on the interpretation of data and the communication of statistical results. Topics include sampling, surveys, experimental designs, observational studies, data exploration, chance phenomena, and methods of statistical inference.

On completion of the course, students will be able to:

- A. Recognize and apply the most appropriate probability sampling techniques in order to collect data from a population.
- B. Understand the basic principles of statistical design of experiments and critically evaluate claims based on statistical reasoning from survey and experimental results.
- C. Interpret and communicate statistical reasoning using basic statistical terms, descriptive statistics, and charts and graphs.
- D. Recognize and evaluate the relationship between two quantitative variables through simple linear regression and correlation and be able to explain why correlation does not imply causation.
- E. Analyze and interpret relationships in two-way tables.
- F. Understand the relationship between sample statistics and population parameters, determine appropriate point and confidence interval estimates of selected population parameters and interpret the estimates.
- G. Describe basic principles of probability, including the application of the normal curve to social and physical phenomena.
- H. Understand the concept of statistical significance, including that it does not always imply practical significance.
- I. Understand the concept of a hypothesis test and be able to describe the hypotheses, select the appropriate statistical test, determine the observed significance level (p-value), interpret the results, and draw appropriate conclusions.