STA115
Recommended Schedule
and Required Dates


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

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

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](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](http://policies.tcnj.edu/policies/digest.php?docId=7642)


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.