



## **STAT 117 – INTRODUCTION TO STATISTICS**

### **Course Information**

Semester	: Summer 2021 (June 28th. - July 30th., 2021)
Credit	: 4
Teaching Hours	: 50 Hours
Location	: Online asynchronous
Professor Name	: Sonja Sandberg
E-mail	: ssandberg@framingham.edu

*Disclaimer: This syllabus is intended to give the student guidance in what may be covered in the course and will be followed as closely as possible. However, the professor reserves the right to modify, supplement and make changes as needs arise.*

### **Catalog Description**

An introduction to the discipline of statistics, emphasizing both statistical thinking and its application to analyzing data. Topics include sampling, design of experiments, organizing and exploring data, probability distributions such as the normal distribution, sampling distributions, hypothesis testing and confidence intervals, correlation and regression. Students are expected to express results of statistical procedures in ordinary non-technical language. Real world applications of statistical topics are emphasized throughout the course. Note: Students may not receive credit for both this course and MATH 107 Business Statistics or MATH 157 Probability and Statistics or MATH 208 Biostatistics. Prerequisite: Satisfactory score on the mathematics placement examination.

### **Content**

Statistics and probability constitute the mathematics of uncertainty. This is an introductory course that gives the students knowledge on both descriptive and inferential statistics. Topics include graphic and numerical representations of various types of data; probability and statistics, discrete and continuous probability distributions; sampling and estimations; statistical inferences.

### **Learning Outcomes**

By the end of the course, students will be able to:

- Understand the different types of studies and their uses
- Distinguish between the different types of data including quantitative and categorical
- Apply the laws of probability to solve problems



# Framingham

---

## State University

- Carry out statistical procedures after determining which one is appropriate
- Communicate statistical ideas to both technical and non-technical audiences

### **Required Textbook and Materials**

MyLab Statistics with Pearson eText -- 18 Week Standalone Access Card -- for  
Elementary Statistics: Picturing the World, 7/e  
Ron Larson and Betsey Taber, Pearson 2019

### **Workload Expectations**

For our accreditation, it is essential that all Framingham State University credit courses follow the Federal Definition of credit hour: for every one hour of classroom or direct faculty instruction, a minimum of two hours of out-of-class student work is required. Since the usual summer courses meet for two contact hours daily (10 contact hours of classroom time weekly), the expectation is that students spend 20 hours per week doing out-of-class work. For the five week 4-credit hour course, this reflects 50 hours of classroom time and 100 hours of out-of-class time since the credit hour is defined as 50 minutes. For this summer's asynchronous online course, the expectation is that a student will spend 30 hours per week working on this course.

### **Course Requirements and Grading**

Note this is an asynchronous online course. We will use Blackboard for all the course work, including reading, reviewing PowerPoint slides, textbook "video tutorials, homework and exams. We will also use the Discussion Board to explore various topics and for student questions. You will need to purchase the e-text and MyLab which comes with quizzes, exams and supplemental materials. The course is divided into five sections, one for each week. As is usual for a mathematics course, the material is cumulative in the sense that what you learn in any one chapter is needed to understand the material in later chapters.

Due to the nature of an asynchronous online course, you will need to be well organized and motivated to complete the course. It is important to develop a schedule and work consistently each day. If you have difficulty, please contact me for help.



# Framingham

---

## State University

Item	Percent of Overall Grade
Homework	45%
Exams	30%
Final Exam	20%
Discussion Board Participation	5%

**Homework:** The course will be structured week by week. There will be regular homework assignments using the online MyLab. Homework assignments will be due on Friday by one minute before midnight. Exams will also be due on Friday by one minute before midnight.

**Approximate Day-to-Day Schedule:** This schedule is subject to change.

**Course Schedule** Please note that this schedule is meant to give an overview of the major concepts in this course. Changes may occur in this schedule as needed to aid in the students' development.

### WEEK ONE:

1.1 An Overview of Statistics

1.2 Data Classification

1.3 Data Collection and Experimental Design

2.1 Frequency Distributions and Their Graphs

2.2 More Graphs and Displays

2.3 Measures of Central Tendency

2.4 Measures of Variation

2.5 Measures of Position



**Framingham**  
State University

Exam 1

WEEK TWO:

3.1 Basic Concepts of Probability and Counting

3.2 Conditional Probability and the Multiplication Rule

3.3 The Addition Rule

4.1 Probability Distributions

4.2 Binomial Distributions

4.3 More Discrete Probability Distributions

Exam 2

WEEK THREE:

5.1 Introduction to Normal Distributions and the Standard Normal Distribution

5.2 Normal Distributions: Finding Probabilities

5.3 Normal Distributions: Finding Values

5.4 Sampling Distributions and the Central Limit Theorem

6.1 Confidence Intervals for the Mean (S Known)



**Framingham**  
State University

6.2 Confidence Intervals for the Mean (S Unknown)

6.3 Confidence Intervals for Population Proportions

Exam 3

**WEEK FOUR:**

7.1 Introduction to Hypothesis Testing

7.2 Hypothesis Testing for the Mean (S Known)

7.3 Hypothesis Testing for the Mean (S Unknown)

7.4 Hypothesis Testing for Proportions

8.1 Testing the Difference Between Means (Independent Samples,  $S_1$  and  $S_2$  Known)

Exam 4

**WEEK FIVE:**

8.2 Testing the Difference Between Means (Independent Samples,  $S_1$  and  $S_2$  Unknown)

8.3 Testing the Difference Between Means (Dependent Samples)

9.1 Correlation

9.2 Linear Regression



## 10.1 Goodness-of-Fit Test

Final Exam on July 30, 2021

**Exams :** There will be four closed-book exam, one for each of the first four weeks. THERE WILL BE NO MAKE-UP EXAMS. In the event that a student misses an exam and presents an acceptable reason to the instructor, the final exam grade will be counted for the missed exam. If you are able to do the homework problems, then you should do well on the exams because the questions on the exams will look very similar to the homework.

**Final Exam :** A comprehensive final exam will be given on July 30, 2021

Overall Average Grade	Letter Grade
95 - 100	A
90 - 94	A-
87 - 89	B+
83 - 86	B
80 - 82	B-
77 - 79	C+
74 - 76	C
70 - 72	C-
67 - 69	D+
63 - 66	D
60 - 62	D-
00 - 59	F

### Academic Honesty Policy

I expect that all of your work will be your own.



# Framingham

---

## State University

Integrity is essential to academic life. Consequently, students who enroll at Framingham State University agree to maintain high standards of academic honesty and scholarly practice. They shall be responsible for familiarizing themselves with the published policies and procedures regarding academic honesty.

Academic honesty requires but is not limited to the following practices: appropriately citing all published and unpublished sources, whether quoted, paraphrased, or otherwise expressed, in all of the student's oral and written, technical, and artistic work; observing the policies regarding the use of technical facilities.

Infractions of the Policy on Academic Honesty include, but are not limited to:

1. Plagiarism: claiming as one's own work the published or unpublished literal or paraphrased work of another. It should be recognized that plagiarism is not only academically dishonest but also illegal.
2. Cheating on exams, tests, quizzes, assignments, and papers, including the giving or acceptance of these materials and other sources of information without the permission of the instructor(s).
3. Unauthorized collaboration with other individuals in the preparation of course assignments.
4. Submitting without authorization the same assignment for credit in more than one course.
5. Use of dishonest procedures in computer, laboratory, studio, or field work. Further clarification on academic honesty will be provided, when appropriate, in individual courses.
6. Misuse of the University's technical facilities (computer machinery, laboratories, media equipment, etc.), either maliciously or for personal gain. Examples include but are not necessarily limited to: (a) accessing the private files of another person or agency without express permission, and (b) the unauthorized use of technical facilities for purposes not connected with academic pursuits. When evidence indicates that a student has improperly used a technical facility, an appropriate supervisor (faculty or staff member) may take appropriate action reflecting the seriousness of the infraction, ranging from a verbal warning to, but not beyond, denial of use of the facility. If coursework may have been plagiarized, the supervisor will also inform all concerned faculty members, who may take action as described in the procedures for handling cases of alleged infractions of academic honesty.
7. Falsification of forms used to document the academic record and to conduct the academic business of the University

### **Accommodation Statement**

Framingham State University offers equal opportunities to all qualified students, including those with disabilities and impairments. The University is committed to making reasonable accommodations as are necessary to ensure that its programs and



# Framingham

---

## State University

activities do not discriminate, or have the effect of discriminating, on the basis of disability. The [Disability/Access Services Office](#) serves students with learning and psychiatric disabilities as well as students with visual, mobility and hearing impairments. For further information about this, please contact Dr. LaDonna Bridges, Associate Dean of Academic Success and Dean of CASA (Center for Academic Success and Achievement) at 508-626-4906 or [lbridges@framingham.edu](mailto:lbridges@framingham.edu).

### **U.S. Copyright Law**

This course website may contain copyrighted materials that are used in compliance with the U.S. Copyright Law. Under that law, materials may not be saved to your computer, revised, copied, or distributed without permission. They are to be used in support of instructional activity as part of this course only and shall be limited to the duration of the course, unless otherwise specified by the instructor or owner of the material. You may only download or print materials at the direction of your instructor who knows which materials are copyrighted and which are not.