

# University of Connecticut

## Introduction to Statistics I (STAT 1000Q)

### Winter Intersession 2018 (12/26/2017 - 1/12/2018)

### Syllabus for Sec Z18, Class Number 1002

#### Basic Information about the Course

**Course Title:** Introduction to Statistics I (STAT 1000Q)

**Credits:** Four (4)

**Recommended Preparation:** MATH 1011 or equivalent

**Instructor:** Dr. Suman Majumdar, [suman.majumdar@uconn.edu](mailto:suman.majumdar@uconn.edu), [WebEx Personal Room](#), (203)286-5631

#### Copyright Compliance

This course is developed by Dr. Suman Majumdar, Associate Professor of Statistics at the University of Connecticut. Any content not created by the developer is used with permission of the copyright holder.

- **E-mail is the best way to reach me.** You can expect a response in less than 12 hours.
- If your query is time sensitive, please don't hesitate to call me. If you leave me a voicemail, I'll get back to you as soon as possible.
- Click [here](#) for details of HuskyCT technical support provided by UConn eCampus.

#### Course Objectives

By the end of the course, you should be able to:

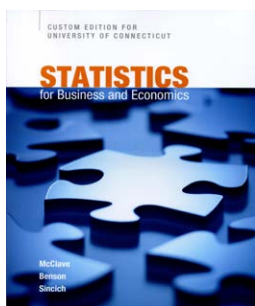
1. Create and read graphs, charts, and tables for classifying, summarizing, and visualizing data.
2. Calculate and interpret descriptive statistical measures including: mean, median, mode, standard deviation, range, percentile, interquartile range, and standardized score.
3. Turn raw data into usable information.
4. Solve elementary probability problems and use random variables for modeling population features.
5. Do calculations involved in the use of inferential statistics, including point and interval estimation and hypothesis testing, and interpret the results of these calculations.
6. Build Regression models for studying relationships between quantitative variables.

## Tools and Texts required for the Course

If you are a Windows PC user (7, 8, or 10), [download](#) Microsoft Office and Minitab 18. If you are a Mac user and have access to a Windows PC, I strongly recommend that you [download](#) Microsoft Office and Minitab 18 on that Windows PC, and complete all the course assessments on that Windows PC. You can use your mac to read the notes, view the lectures, and participate in [WebEx](#) office hours (using Chrome, not Safari) without any glitch. If you are a Mac user and do not have access to a Windows PC, you should continue to use your mac to read the notes, view the lectures, and participate in [WebEx](#) office hours (using Chrome, not Safari). However, for the course assessments, you should use [the SKYBOX by UCONN](#). If you run into any problem with the SKYBOX, please report it to [helpcenter@uconn.edu](mailto:helpcenter@uconn.edu) or call (860)486-4357 during normal business hours.

Click [here](#) to download the required plug-in **Acrobat Reader** to your computer. Your computer should be able to play this [video](#). If you are using a Mac, the video may not play if the link opens in Safari. In that case, open Chrome on your mac and copy the link from the address bar in Safari to the address bar in Chrome. If you cannot play the video on your computer, please fill out this [form](#).

You can buy both the textbook and the workbook at any [UConn Bookstore](#), by selecting Stamford as Campus. The Textbook may be available at a cheaper price online.



### ***Textbook: STATISTICS for Business and Economics, UCONN Custom Edition***

By James T. McClave, P. George Benson and Terry Sincich

Pearson Education, Inc.  
ISBN-13: 978-1-323-75149-7

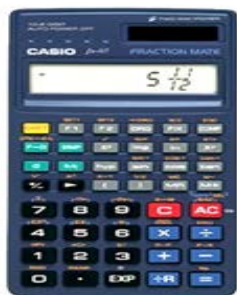
**Taken from:**  
*Statistics for Business and Economics, 13th Edition*  
ISBN-13: 978-0-134-50659-3



### ***Workbook: An Introduction to DATA ANALYSIS Using Minitab 17, 5<sup>th</sup> Edition for UCONN***

By Kathleen M. McLaughlin and Dorothy B. Wakefield

Pearson Education, Inc.  
ISBN-13: 978-1-323-01363-2



You will need a scientific calculator.

## Course Description

The course is developed around Chapters 1-8 and 11 of the Textbook, **Statistics for Business and Economics**, 13<sup>th</sup> edition, by James T. McClave, P. George Benson, and Terry Sincich. Please note that these 9 chapters span 561 pages and it is impossible to cover these pages verbatim in one semester. That, and other pedagogical considerations, cause me to substantially reorganize the content into the 13 modules described broadly in the next page. It is important for you to note how each module relates to the Chapters in the Textbook and the Workbook, **An Introduction to Data Analysis using Minitab 17**, 5<sup>th</sup> edition, by Kathleen McLaughlin and Dorothy Wakefield.

**Module 1 - The Science of Statistics** This module corresponds very closely to Chapter 1 of the Textbook.

**Module 2 - Methods for Describing Data** This module is developed around Chapter 2 of the Textbook and Chapters 1-3 of the Workbook, but contains additional material in the Module notes that is covered neither by the Textbook nor by the Workbook.

**Module 3 - Probability** This module corresponds to Chapter 3 of the Textbook, but there is some divergence between the content of the module and the Textbook Chapter. You should follow the Module notes carefully and use the Textbook as indicated.

**Module 4 - Random Variables and Probability Distributions** This module is developed around Chapter 4 of the Textbook. We do most of the numerical work using Minitab (as opposed to the Textbook, which uses formulas and calculators). As such, Chapters 5 and 6 of the Workbook play a pivotal role in this module. Again, Module notes will indicate how to use the Textbook.

**Module 5 - Sampling Distributions** This module is developed around Chapter 5 of the Textbook. It contains additional material that is covered neither by the Textbook nor by the Workbook. It does make substantial use of Chapter 7 of the Workbook. Read the Textbook in conjunction with the Module notes.

**Module 6 - Introduction to Estimation with Confidence Intervals** This module makes no direct use of the Textbook or the Workbook.

**Module 7 - Introduction to Hypotheses Testing** This module, like Module 6, makes no direct use of the Textbook or the Workbook.

**Module 8 - The One Sample Problem** This module is nominally related to Sections 6.1-3 and Sections 7.1-5 of the Textbook, but my pedagogy is radically different from that of the Textbook. I think what the Textbook covers in Chapters 6 and 7 are joined at the hip and separating them impedes the process of learning. I also de-emphasize the many formulas for calculating the values of the various statistical estimators - using Minitab to do the same jobs is a much more efficient process. Chapters 8 and 9 of the Workbook play a pivotal role here.

**Module 9 - The One Proportion Problem** This module is nominally related to Section 6.4 and Section 7.6 of the Textbook, but pedagogical considerations (similar to the ones shaping my handling of the content of Module 8) cause me to develop it around Chapters 8 and 9 of the Workbook.

**Module 10 - The Paired Difference Experiment Problem** The Textbook deals with this material in Section 8.3, but we are going to de-emphasize the formulas again and develop it around Chapter 10 of the Workbook.

**Module 11 - The Two Sample Problem** The Textbook deals with this material in Section 8.2, but continuing with the approach of de-emphasizing formulas and using Minitab to do the numerical work, we are going to develop the module around Chapter 10 of the Workbook.

**Module 12 - The Two Proportion Problem** The Textbook deals with this material in Section 8.4, and the Workbook does not deal with this material at all. Again, we are going to shun formulas and use Minitab, and I'll post material that will illustrate how to handle this problem using Minitab.

**Module 13 - Relationships Between Quantitative Variables, Correlation and Regression** This module deals with what is covered in Chapter 11 of the Textbook, but I make very little use of the Textbook. I have a set of lecture notes and use them along with Chapter 11 of the Workbook to deliver the content.

## Course Assessments

### Computer Assignments

There will be **5 computer assignments**, for a total of **100 points**. Collaboration among students on these assignments is *strictly* prohibited. Please review the [Assignment Details](#) document for more information.

Every assignment will have a **deadline**, followed initially by an **extended deadline** (when it becomes unavailable) and subsequently by an **über extended deadline** (coinciding with the release of the solution to the assignment). Please note that an assignment submitted after its **deadline** is considered late and may not be graded for full credit; *no matter what, a submission of an assignment will not be accepted once its solution is released*.

The Course Menu on the left side of the Home Page contains the link to a folder titled **Assignments**. Every assignment and its solution will be placed inside that folder. Click on the **link for an assignment** (*different from the [link for an assignment file](#)*) to access and submit it. You can attach the file you intend to submit as your assignment in that page.

### Problem Sets

There will be 2 problem sets on HuskyCT, one for Module 3 and another for Module 4, for a total of 40 points. Please review the [Problem Set Details](#) document for more information.

You will have two attempts at every problem set and the higher of the two scores will count towards your grade. Every problem set must be submitted by its deadline.

The Course Menu on the left side of the Home Page contains the link to a folder titled **Problem Sets**. Every problem set and its solution will be placed inside that folder. Make it a habit to read the description of a problem set carefully before clicking on its link to access it.

By completing these problem sets, you agree to abide by the **Honor Code**: *You will not seek help from anyone*. Note that you are allowed to use any course resource, including your calculator and Minitab, while completing the problem sets.

### Timed Quizzes

There will be **10 multiple-choice online** quizzes, one for each *Learning Module* sans **1, 6, and 7**, for a total of **60 points**. Please review the [Quiz Details](#) document for more information.

The Course Menu on the left side of the Home Page contains the link to a folder titled **Quizzes**. Every quiz and its solution will be placed inside that folder. Make it a habit to read the description of a quiz carefully before clicking on its link to access it.

By taking these quizzes, you agree to abide by the **Honor Code**: *You will not seek help from anyone*. Note that you are allowed to use any course resource, including your calculator and Minitab, while taking the quizzes.

### Proctored Exams

There will be **two proctored exams**, the Midterm and the Final. The exams are open book and open notes.

The Midterm will encompass Modules 2-4 and the Final will encompass Modules 5-13. Each exam will consist of **30 multiple-choice** questions and will be of **2 hours** duration.

You will take the exams **online** with [ProctorU](#), a proctoring service chosen by the University. To do so, you will need a webcam and a microphone on your computer, and a reliable high speed internet connection. Please [check](#) to see if your equipment meets the technological requirements of [ProctorU](#). There is no additional cost to you for this service.

Please review the [Course Schedule](#) document carefully for further details about the exams.

The Course Menu on the left side of the Home Page contains the link to a folder titled **Exams**. The Midterm and the Final will be placed inside that folder.

Due to the extremely compressed nature of the Intersession, it is next to impossible to arrange make-up exams. As such, a make-up exam will be granted **only in case of a verifiable and extreme emergency**.

### Course Grading

For each of you, I will calculate a **W**(weighted)-score, using the formula  $W = C/5 + P/10 + Q/3 + M + F$ , where **C**, **P**, **Q**, **M**, and **F**, stand for the points you *score* on the computer assignments, the problem sets, the *quizzes*, the Midterm, and the Final, respectively, rounded (up) to the next whole number.

The Midterm will have 10 questions from Module 2, 10 from Module 3, and 10 from Module 4. For each student, I'll use the Midterm to generate a **synthetic** Module Quiz score for each module encompassed by the Midterm, and replace the **actual** Module Quiz score by the synthetic score if the synthetic score is higher. For example, suppose you score 5 on Module 2 Quiz. If you answer 7 (out of the 10) Module 2 questions on the Midterm correctly, I'll change your Module 2 Quiz score to 7, but if you answer 4 (out of the 10) Module 2 questions on the Midterm correctly, your Module 2 Quiz score will remain unchanged at 5.

Similarly, the Final will have 4 questions from Module 5, 7 from Module 8, 3 from Module 9, 3 from Module 10, 6 from Module 11, 2 from Module 12, and 5 from Module 13. For each student, I'll use the Final to generate a synthetic Module Quiz score for each module encompassed by the Final, and replace the actual Module Quiz score by the synthetic score if the synthetic score is higher.

Your **W-score** will be converted into a **Letter Grade** using the scale below.

W-Score	Letter Grade	W-Score	Letter Grade	W-Score	Letter Grade
0-33	F	50-54	C-	76-80	B
34-38	D-	55-62	C	81-85	B+
39-43	D	63-70	C+	86-90	A-
44-49	D+	71-75	B-	91-104	A

Here is an [Excel Template](#) for calculating your **W-score**.

Please note that depending on the **distribution** of the **W-score**, I may *modify the scale, i.e., curve*, but only to make it more *lenient*. What that means is *your Letter Grade on a modified scale will never be lower than that on the scale above*.

### Students with Disabilities

Students with disabilities should contact me and the [Center for Students with Disabilities](#) as soon as possible, in order for appropriate accommodations to be provided in a timely manner.

## Course Operating Procedures

### How to Approach this course (This is IMPORTANT!)

Because you are working in an isolated environment away from other course participants, i.e., other students in the course and yours truly, as opposed to with them in a brick and mortar classroom, **the risk of falling behind is higher in an online course**. This problem is often compounded by a temptation to procrastinate, which is fueled by the asynchronous nature of learning in this format. That said, taking an online course can be a truly rewarding experience (above and beyond the convenience it provides) if you become engaged, follow the instructions to keep up with the assigned work, and communicate regularly with other course participants, including yours truly. To facilitate that, **I'll regularly hold virtual office hours** using [WebEx](#).

Since we will be covering 14 weeks of material in 18 days, you will have to devote a substantial amount of time (on the average about 8 hours a day) to the course on each of these 18 days. The [Course Schedule](#) outlines how you should organize your course related activities over this period. Following the schedule will protect you against falling behind and let you learn with confidence what you need to. It will be very overwhelming (and ineffective) if you procrastinate and then try to make up for the lost time.

[Here](#) is the link to the Links and Resources Page of The Academic Achievement Center of UConn.

### Discussions

The **Discussion Board** in Husky CT provides a platform to *meet* other course participants and initiate a dialogue on any (obviously, course related) topic of interest. While posting to the **Discussion Board** please write complete sentences and check for spelling and grammar. I strongly encourage you to regularly use the **Discussion Board**.

Please introduce yourself to the rest of the class by submitting a post to **the Discussion Board on Introductions**.

### Academic Misconduct

Academic misconduct in any form is in violation of [The Student Code](#), which is **incorporated into this document by reference**, and will not be tolerated. This includes, but is not limited to, copying or sharing answers on tests or assignments, plagiarism, and having someone else do your academic work. Depending on the act, a student can receive an F grade on the test/assignment, F grade for the course, or can be suspended or expelled. In this context, let me emphasize that substantially similar submissions of an assignment from different students will be treated as an instance of academic misconduct by the students involved.

I take plagiarism seriously. If you're not sure how to recognize and avoid plagiarism, click [here](#).

### Your Responsibility

For a variety of reasons, I may have to modify the policies and procedures outlined in this document, as well as the various deadlines mentioned in the [Assignment Details](#), the [Problem Set Details](#), and the [Quiz Details](#). Such modifications, if any, will be announced on Husky CT. It is **your responsibility** to keep track of these announcements.

#### Syllabus Quiz

Please take the Syllabus Quiz once you gain access to the course website on [Husky CT](#). This quiz is of unlimited duration and you can take it an unlimited number of times, but you must score 100% on this quiz in order to access the course content.