

**MAT 168 Course Syllabus**  
**Summer 2016 Online w/Campus Requirement**  
**May 23-Aug 2**

\*\*\*\* Please read the following carefully, as you are responsible for its content!\*\*\*\*

**Instructor:** Sarah Leone

**Email:** Please contact me through Blackboard Messages. Only if BB is down should you email me at [sleone@mxcc.edu](mailto:sleone@mxcc.edu).

**Course Title:** Elementary Probability and Statistics, CRN # 2042

**Pre-requisites:** Eligible for ENG\*101 and MAT \*137 with a grade of “C” or better OR eligible for ENG\*101 and math placement.

**Description of course:** Graphs and charts, measures of central tendency and variation. Elementary probability theory, random variables, probability distributions, with emphasis on the binomial and normal. Sampling distributions, hypothesis testing, confidence intervals, correlation and linear regression. Use of technology included.

**Text:** *Elementary Statistics Picturing the World, Larson and Farber, 6<sup>th</sup> Edition*  
w/MyStatLab Access Kit

**OR**

Purchase access to MyStatLab directly online and use the available e-book.

\*\*\* You will also need a TI 83 or 84 Graphing Calculator\*\*\*\*

**General Expectations:** Summer courses in statistics are extremely compressed, with an enormous amount of material covered in a short period of time. Taking the course online can make it that much more difficult to stay on top of the material. It is crucial that you are doing work EVERYDAY during this summer session to be successful. If we were to meet in a classroom, you would be spending about 7 hours in class per week, and a minimum of another 5-7 hours outside of class doing work. Please keep that in mind to give yourself a guideline as to how many hours you will need to dedicate to this course.

**Blackboard Learn:** The entire course is set up using Blackboard Learn. I am often going to abbreviate this to BB. In BB you will find weekly announcements, links to your weekly notes, read brief summaries on your weekly topics, follow the calendar, contact me and post discussions. There are also links for help on BB. It is your responsibility to be logging on to BB and checking for announcements and following along with the course calendar. There is a hotline available for BB help 24/7. The number for this is 866 940 1928.

**Communication with me:** Please email me through Blackboard Messages only. The only time you should need to use my email is if Blackboard is down. To email me through Blackboard, go

to Messages on the navigation bar on the left and you will be able to find my name to send me a message. Please allow 24 hours for me to get back to you once you have emailed me.

**Calendar:** You will find a one-page calendar with the topics and due dates for each week of the semester. I strongly encourage you to print this out during the 1<sup>st</sup> week of classes and use it as a reference each week so you don't miss any due dates.

**Weekly Notes:** At the beginning of each week, a brief summary of the week's topics and assignments, along with lecture videos will be posted for you to read. These weekly postings will be under Weekly Notes and Materials on the task bar in Blackboard. Please be sure to start your week off by reading these weekly postings. I will be reminding you of upcoming due dates in these postings so it is a great way to keep track of what's due in each upcoming week.

**Homework:** Each week you will be assigned a homework assignment that you are to complete using My Lab Mastering/MyStatLab, abbreviated MSL. You get to MSL by using the link on BB, or by going to [www.pearsonmylab.com](http://www.pearsonmylab.com). **If you bought the textbook, you should have purchased a MyStatLab Access Kit. In that kit is an access code that you will need in order to register at My Lab/Mastering. You can also purchase an access code directly from the website with a credit card.** You will have to register using the course ID and your access code at [www.pearsonmylab.com](http://www.pearsonmylab.com) ASAP to start completing your assignments. Your course ID will be provided in an announcement at the start of the course.

You can work on the homework as many times as you like before the due date. **You will get three attempts at each question before MSL marks that question incorrect. When that happens, you may choose "Similar Problem" and you will be given a new problem to try.** All homework assignments are due at the end of the week the topic is covered. For example, MSL HW #1 is due Sunday May 29. This assignment is on the topics covered the week of May 23. It is the expectation that you work on the material during the week/weekend, complete the homework by the end of the week and then move on to the next week's material. **All the homework assignments are available in MSL as of the first day of classes, so you can work ahead if you choose to.** Before attempting MSL homework, you will want to read the assigned sections from text and try the exercises at the end of each section. There are answers to the odd exercises in the back of the text so that you can check your work before completing your MyStatLab homework. Because this class is online and you are doing the work independently, it is critical that you stay on top of the material. Please make sure you are submitting on time! **NO LATE HOMEWORK WILL BE ACCEPTED!**

**\*\*\*MyLab Mastering has many great features to help with the material. Once you are registered and logged onto MSL, be sure to look at the task bar on the left to see what else it has to offer. There are chapter notes, additional exercises, power point slides, videos with an instructor working through problems, and sample tests/quizzes. Also, My Lab/Mastering offers a Study Plan to show you the areas you need to work on. Every time you complete an assignment, the study plan is updated and you can go in and try more examples from that material. Please check this stuff out so you know where to go if you start having difficulty with the material.**

**Quizzes/Tests:** Your quizzes and tests are also taken in MyStatLab. Exams are timed, so you will have to complete them in one sitting. Once you open the quiz/exam, the timer will start. The reason tests are timed is to make sure that everyone has been fully prepared and mastered the material BEFORE taking the test. If you find that you are running out of time on these assessments, it is most likely because you have not practiced enough. If you are spending a good deal of time looking through your book/notes while you are taking a test, you will almost

definitely run out of time. A short description of each exam, including amount of time you have to complete will be in your weekly notes and also in the calendar. Tests/Quizzes will be available at 8:00 a.m. the Monday before the due date. Those dates are also on your Calendar of Topics and Due Dates. All tests/quizzes must be completed by midnight on the due date. Each week you will have at least a quiz or test due, as well as your discussion and weekly homework in MSL. The expectation is that you are working on the homework all week and you take the test once you have completed that and feel comfortable with the material. You will be able to view your test grades as soon as you have submitted your answers, but you can only review your answers once the due date has passed. Please follow the calendar so you do not miss a due date. **NO LATE EXAMS WILL BE ACCEPTED UNLESS YOU HAVE A PHYSICIAN'S NOTE OR SOME DOCUMENTATION STATING YOU WERE UNABLE TO TAKE THE EXAM ON TIME.**

\*\*\*\*Note about partial credit—My Lab/Mastering will give partial credit if you get one part of a question correct but not another part. However, since it is a computer grading these tests/quizzes, it will not award you partial credit if you have an answer wrong due to rounding, or some other very minor error. Once each due date passes, please review your test/quiz in MSL. You can email me if you feel there are some questions that you deserve partial credit on, along with your work. I can adjust the grade manually if I find you deserve more credit than you were given.

***Final Exam:*** You will be required to take your final exam on campus during one of the two provided times below. The format of the exam will be exactly the same as every other exam, and taken on MSL. You may use notes and textbook on the final exam. The purpose of requiring the exam to be taken on campus is so that the instructor may check student IDs and ensure the test is being taken without the help of anyone else.

**YOU MUST EARN AT LEAST A 60% ON THE FINAL EXAM IN ORDER TO PASS THE COURSE.** Failure to earn a 60% will result in an F for the course, regardless of your calculated average.

**Your exam for Summer 2016 will be given on August 1, 2016, from 12:30-3:00 OR 4:00-6:30. You will be required to attend one of these sessions to complete your exam.**

***Discussions:*** You will have weekly discussions throughout the summer session, the first one being due on Sunday May 23. The due dates are on your calendar. Go to DISCUSSIONS on the navigation bar in BB to get full description and to post your response to the discussion. Some of these discussions will be open-ended questions like “Tell the class one thing that you are having difficulty with this week”, and some will be problems that relate to the material we are covering and are more like mini-projects (worth more points). For some discussions you will be able to read other responses and some you will be replying directly to me. There will be more than one discussion that has an option to be done in groups, so please be sure not to wait until the last minute to start posting.

***Use of the Calculator:*** We will use the graphing calculator for almost every topic we cover. It is extremely important that you get comfortable using the calculator from the very beginning of class. If you are trying to do every calculation by hand all semester, you will run out of time on the quizzes/tests. The best calculator for you to have is the TI-83 or 84. When you purchased the textbook from the bookstore, you should have also purchased a Graphing Calculator Guide for

Statistics. This guide will be very useful to you as you are learning how to do statistical calculations. I will also put step-by-step instructions in the weekly notes each week for using the calculator. There are also a few links on the homepage of BB that are very useful in teaching how to use the calculator. Take a few minutes to check them out.

**Grading:** Your final grade will be comprised of the following:

Tests(3)	40%
Final Exam	20%
Homework	20%
Quizzes	10%
Discussions	10%

*\*\*\*Your discussion grades can be found under MY GRADES in Blackboard. The rest of your grades will be in MyStatLab\*\*\**

**Grading Scale:** The following is the grading scale for MxCC College:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93 – 100	90 – 92	87 – 89	83 – 86	80 – 82	77 – 79	73 – 76	70 – 72	67 – 69	63 – 66	60 – 62	< 60

**Withdrawal:** You may withdraw from this class any time before July 15. A completed and signed withdrawal form must be on file in the Records Office by the deadline in order to receive a “W” on your transcript. If you fail to complete this process on time, you will receive a letter grade at the end of the semester, which will include zeroes for any work not submitted. Course withdrawals may affect financial aid and veteran’s benefits, so please make this decision carefully, and with the help of your advisor. Please see the Academic Calendar and the College Catalog for specific dates and procedures regarding the withdrawal process.

**Student Email Accounts:**

All Connecticut Community College students now have an official email address ([prefix@mail.ct.edu](mailto:prefix@mail.ct.edu)) to which all college-based communications will be sent. The “prefix” is the first letter of your first name, followed by first 4 letters of your last name, followed by a 4-digit number (e.g., [jsmit1234@mail.ct.edu](mailto:jsmit1234@mail.ct.edu) for John Smith). If your last name contains fewer than four characters; the "prefix" will include all letters of your last name (e.g., [jdoe1234@mail.ct.edu](mailto:jdoe1234@mail.ct.edu) for John Doe). You access Office 365 at <http://portal.microsoftonline.com> and log in with your CCC NetID username and password. For more details, please see <http://www.ct.edu/365#faq>. Please check my email communications using college-provided student email accounts.

**ADA accommodations:** Students with physical or learning disabilities who may require accommodations are encouraged to contact the Counseling Office. After disclosing of the nature of the disability, students are urged to discuss their needs with individual instructors. This should be done at the beginning of each semester. Instructors, in conjunction with appropriate college

officials, will provide assistance and/or accommodations only to those students who have completed this process.

**Academic ethics and classroom behavior:** At Middlesex Community College we expect the highest standards of academic honesty. Academic dishonesty is prohibited in accordance with the Board of Trustees; Policy Manual. This policy prohibits cheating on examinations, unauthorized collaboration on assignments, unauthorized access to examinations or course materials, plagiarism, and other proscribed activities. Plagiarism is defined as “the use of another’s idea(s) or phrase(s) and representing that/those idea(s) as your own, either intentionally or unintentionally.”

**Math Placement Tests:** The purpose of the Math Placement Exam is to assess a student’s background and place him/her in an appropriate level of mathematics so as to increase the likelihood of a student’s success. If a student believes that he/she has been misplaced in a math class, the student is responsible for speaking with his/her math teacher during the first week of class. If, after reassessing the placement, the math teacher believes that the student should be reassigned to another math class, the student must complete the course change process before the second week of class.

### **IMPORTANT COLLEGE POLICIES!! PLEASE READ CAREFULLY!**

For information about the college's policies and procedures regarding academic honesty, accessibility/disability services, attendance, audio-recording in the classroom, grade appeals, plagiarism, religious accommodations, weather and emergency closings, and more, please go to the following website: [www.mxcc.edu/catalog/syllabus-policies/](http://www.mxcc.edu/catalog/syllabus-policies/) or scan the QR code with your smart phone. Also, please become familiar with the policies regarding nondiscrimination, sexual misconduct, and general student conduct at the following website: [www.mxcc.edu/nondiscrimination/](http://www.mxcc.edu/nondiscrimination/).



**Course Description**

Graphs and charts, measures of central tendency and variation. Elementary probability theory, random variables, probability distributions, with emphasis on the binomial and normal. Sampling distributions, hypothesis testing, confidence intervals, correlation and linear regression. Use of technology included.

*Prerequisite: Eligible for ENG\*101 and MAT\*137 (or higher) with a grade of "C" or better OR eligible for ENG\*101 and math placement.*

**General Objectives of the Course**

After completing this course, the student will be able to:

- Describe both descriptive statistics and inferential statistics
- Construct (by hand and using technology, as appropriate) and analyze tables, graphs, and numerical summaries of data sets, including examples of real-world phenomena, to ascertain the defining features of the subject matter under investigation
- Understand the importance of appropriate data gathering methods to ensure the quality and reliability of data collected
- Understand elementary probability theory, discrete and continuous random variables and probability distributions, and sampling distributions
- Construct (using technology, as appropriate) confidence intervals and interpret results to arrive at reasoned inferences or conclusions
- Perform (using technology, as appropriate) one- and two-sample hypothesis tests (population mean and proportion) and interpret results to arrive at reasoned inferences or conclusions
- Find (using technology), interpret, and use the least-squares regression line
- Be better informed citizens as a result of being able to understand and interpret media reports involving statistics and statistical studies
- Provide clear, logical and organized explanations through verbal and written responses.

Specific Objectives of Instructional Unit		
Unit No.	Instructional Unit	Assume that each statement is prefixed with "The student will be able to".
1	Introduction to Statistics	<ul style="list-style-type: none"> <li>• Explain how the scientific method applies to statistics</li> <li>• Formulate null and alternative hypotheses</li> <li>• Explain direction of the extreme and how it determines alternative hypotheses</li> <li>• Explain <i>p</i>-value and how it is used to make decisions</li> <li>• Explain Type I and Type II errors and their consequences</li> <li>• Explain the difference between population and sample</li> <li>• Explain how a parameter differs from a statistic</li> </ul>

2	Producing Data	<ul style="list-style-type: none"> <li>• Explain various types of bias that may occur in statistical studies</li> <li>• Explain the difference between the target population and the sample</li> <li>• Explain factors to consider when designing a statistical study</li> <li>• Identify and explain various types of sampling</li> <li>• Generate random integers appropriately in applied situations</li> <li>• Explain the difference between response variables and explanatory variables</li> <li>• Explain confounding variables</li> <li>• Explain the difference between treatment and control groups</li> <li>• Explain the difference between experimental study and observational study</li> <li>• Explain the difference between retrospective and prospective studies</li> </ul>
3	Summarizing Data Graphically and Numerically	<ul style="list-style-type: none"> <li>• Explain the meaning of <i>descriptive statistics</i></li> <li>• Construct (by hand and with technology, where appropriate) and interpret frequency distributions, relative frequency distributions, bar charts, pie charts, histograms, stem-and-leaf displays, box-plots, and time plots.</li> <li>• Identify misleading graphical displays</li> <li>• Recognize and interpret symmetry and skewness in a distribution</li> <li>• Interpret the numerical summary measures</li> <li>• Calculate (by hand or using technology, as appropriate), explain, and interpret mean, mode, median, range, variance, standard deviation, percentiles, and quartiles for a given data set</li> </ul>

4	Probability	<ul style="list-style-type: none"> <li>• Demonstrate understanding of normal distributions</li> <li>• Apply the 68-95-99.7% Rule</li> <li>• Explain and apply standardization</li> <li>• Find proportions and percentiles using normal distribution</li> <li>• Explain the concept, vocabulary, and rules of probability</li> <li>• Identify sample spaces and events</li> <li>• Explain disjoint events</li> <li>• Find probabilities of events</li> <li>• Combine events using complement, union, and intersection</li> <li>• Apply the definition of independence</li> <li>• Apply the laws of probability</li> <li>• Explain random variables</li> <li>• Explain the difference between discrete and continuous random variables</li> <li>• Construct and interpret probability distribution tables and graphs</li> <li>• Calculate (by hand or using technology, as appropriate) and interpret mean and standard deviation</li> <li>• Apply (appropriately) the binomial distribution</li> <li>• Explain how to move from discrete to smooth continuous distributions</li> <li>• Apply the knowledge that probability for continuous random variables is represented by area</li> <li>• Explain the concept and importance of and be able to apply normal distributions</li> </ul>
5	Sampling Distributions; Making Decisions	<ul style="list-style-type: none"> <li>• Calculate and apply point estimates for the population mean, standard deviation, and proportion</li> <li>• Explain the meaning of the sampling distribution of a statistic</li> <li>• Describe the characteristics of the sampling distribution of the sample mean and sample proportion</li> <li>• Apply the Central Limit Theorem</li> <li>• Apply the t-distribution, when appropriate</li> <li>• Construct confidence intervals (by hand and using technology, as appropriate) for mean and proportion</li> <li>• Determine the minimum required sample size if given level of confidence and margin of error</li> <li>• Perform hypothesis tests (by hand and using technology, as appropriate) for population mean and population proportion and interpret their results</li> <li>• Interpret p-value</li> </ul>



6	More about Making Decisions	<ul style="list-style-type: none"><li>• Construct appropriate confidence intervals in two-sample situations</li><li>• Perform appropriate hypothesis testing in two-sample situations</li><li>• Calculate (by hand or using technology, as appropriate), interpret, and use appropriately the least-squares regression equation for a data set</li><li>• Explain the dangers of extrapolation</li><li>• Explain residuals</li><li>• Perform residual analysis</li><li>• Distinguish between influential points and outliers</li><li>• Calculate and interpret the correlation coefficient</li></ul>
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