Hello.

The following is a sample syllabus for MATH 117 - Elements of Statistics.

Please know that a syllabus may vary in important ways from semester to semester, from instructor to instructor, and so on. While this document provides a general view of course expectations and workload, it is not intended to exactly represent all sections of this course.

Thank you.

#### MONTGOMERY COLLEGE DEPARTMENT OF MATHEMATICS, STATISTICS, AND DATA SCIENCE SYLLABUS – MATH 117 ELEMENTS OF STATISTICS

Instructor Information	Course Information
Instructor: Office: Email:	CRN: Important Dates:
Office Hours:	No Grade Recorded/Change to Audit: Withdrawal with a Grade of W: Final Exam:
	Classroom/Times:
	Blackboard: All course material will be posted here
	<b>Online Software:</b> WileyPlus (includes access to eText)

**Course Description**: An introductory non-calculus statistics course to serve a variety of students who need a working knowledge of statistics. Topics include descriptive analysis and treatment of data; scatterplots, linear regression and correlations; bootstrapping and randomization distributions; calculating, analyzing, and interpreting hypothesis tests and confidence intervals for one- and two-variable means and one- and two-variable proportions. Preexisting statistical computer programs may be used for some applications. Credit may not be earned in both MATH 117 and MATH 117A. PREREQUISITE: A grade of C or better in MATH 093, MATH 096, or MATH 115A; appropriate score on mathematics assessment test, or consent of department. Assessment levels: ENGL 101/101A, READ 120. Three hours each week. Formerly MA 116.

# **Course Outcomes**

Upon course completion, a student will be able to:

- Calculate and interpret confidence interval estimates of population parameters (proportions and/or means)
- Demonstrate an understanding of the importance that random sampling and randomization play in producing data that allow one to draw conclusions about the underlying populations.
- Explain that statistical procedures have specific requirements necessary for their application and verify that the fulfillment of these requirements has been satisfied for the situation with which the student is dealing.
- Express in clearly written form, and always in the context of the particular problem situation, the results of statistical investigations and analyses

- Formulate and conduct tests of significance for population parameters (proportions and/or means) and interpret the results in the original context.
- Use a variety of graphical and numeric tools to explore and summarize categorical and quantitative data, including linear models of associations between two quantitative variables.
- Use statistical software (computer- or calculator-based) to explore and analyze data and interpret the results produced by that software in context.
- Use the results of the central limit theorems for sample proportions and sample means to predict the longterm patterns of variation of those statistics under repeated sampling based on an understanding of the normal distribution.

**MATH 117 fulfills a General Education Program Mathematics foundation requirement.** Montgomery College's General Education Program is designed to ensure that students have the skills, knowledge and attitudes to carry them successfully through their work and personal lives. This course provides multiple opportunities to develop two or more of reasoning, technological competency, and information literacy. For more information, please see <a href="http://cms.montgomerycollege.edu/gened/">http://cms.montgomerycollege.edu/gened/</a>

**Prerequisite:** Appropriate score on the mathematics assessment test, a grade of C or better in MATH 093 or MATH 096, or consent of department. Assessment levels: EN 101/101A, RD 120

## Textbook

WileyPlus with online-only version of book, Lock: *Statistics 2e*, WileyPlus. Access code from the Bookstore, ISBN: 9781119491286 (Note - this may also be purchased directly from <u>www.wileyplus.com</u> for a slightly lower price)

OR

WileyPlus with online-only version of book **and loose-leaf text**, Lock: *Statistics 2e*, WileyPlus. Access code from the Bookstore, ISBN: 9781119491323 (Note - this may also be purchased directly from <u>www.wileyplus.com</u> for a slightly lower price)

Calculator policy: TI-83/83+ or 84/84+

## **COURSE REQUIREMENTS**

## Homework:

You will have online homework assignments EVERY DAY. You should be prepared to spend a **minimum of 6-8 hours per week outside of class** working on homework and studying. All homework will be online using WileyPlus software.

You are responsible for:

- Answering reading assignment questions (often called pre-class assignments, which are due at the very beginning of class)
- Reading/reviewing notes and examples
- Practicing more problems from the book when you need to focus on a particularly challenging topic

Tips for success:

- Complete the reading before a new unit begins, and then review again after the unit is over.
- Be an active participant during class time. Ask questions during class or office hours, or by email.
- Give yourself plenty of time to prepare for exams.
- Do not procrastinate don't let a unit go by with unanswered questions as it will just make the following unit's material even more difficult to follow.

**Grading Policy and Criteria:** 

A (90-100%) B (80-	-89%) C (70-7	79%) D (60	)-69%) F (	(0-59%)
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**Methods of Evaluation:** 

Test 1	17 %
Test 2	17 %
Test 3	12 %
Quizzes	12 %
Homework	5 %
Activities and Labs	17 %
Statistics Final Exam	20 %
TOTAL	100%

#### Exams / Quizzes

You will be given a zero for every exam missed, and NO MAKE UPS WILL BE GIVEN, except in situations of extreme emergencies.

On a test/quiz day: I will not provide calculators/pencils. You will not be permitted to share calculators. You may not use or hold a cell phone.

Make-up Policy: \_\_\_\_\_

Attendance Policy: You are expected to be in class every day, on time, and YOU are responsible for making up all work missed due to the absence.

Accommodations for Students with Disabilities Statement: Disability Support Services (240-567-5058) Any student who may need an accommodation due to a disability, please make an appointment to see me during my office hour. A letter from Disability Support Services authorizing your accommodations will be needed. Any student who may need assistance in the event of an emergency evacuation must identify to the Disability Support Services Office; guidelines for emergency evacuations for individuals with disabilities are found at: www.montgomerycollege.edu/dss/evacprocedures.htm

If you are a veteran or on active or reserve status and you are interested in information regarding opportunities, programs and/or services, please visit the Combat2College website at <a href="https://www.montgomerycollege.edu/combat2college/">www.montgomerycollege.edu/combat2college/</a> and/or contact Joanna Starling at 240-567-7103 or <a href="https://www.montgomerycollege.edu">Joanna.starling@montgomerycollege.edu/combat2college</a>

**Delayed Opening or Closing of the College:** Because of inclement weather or utility or for other reasons, it may be necessary to delay opening or suspend all operations of the College or an individual campus. Because this course is entirely online, you are expected to continue working on material as scheduled. If you are experiencing a power outage, please leave a voice message on my office phone.

**Math Learning Centers:** You may receive help here from faculty or student tutors. You may also borrow a TI graphing calculator here for one day or for the entire semester. You should take advantage of this excellent resource center. (Each campus has its own learning center.)

# **Important Student Information Link**

In addition to course requirements and objectives that are in this syllabus, Montgomery College has information on its web site (see link below) to assist you in having a successful experience both inside and outside of the classroom. It is important that you read and understand this information. The **link below provides** information and other resources to areas that pertain to the following: student behavior (student code of conduct), student e-mail, the tobacco free policy, withdraw and refund dates, disability support services, veteran services, how to access information on delayed openings and closings, how to register for the Montgomery College alert System, and finally, how closings and delays can impact your classes. If you have any questions please bring them to your professor. As rules and regulations change they will be updated and you will be able to access them through the link. If any student would like a written copy of these policies and procedures, the professor would be happy to provide them. By registering for this class and staying in this class, you are indicating that you acknowledge and accept these policies. http://cms.montgomerycollege.edu/mcsyllabus/

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DATES	Textbook	STATISTICS TOPICS	
	Section		
Week 1	1.1-1.3	Intro to Stats, WileyPlus, STATKEY, Collecting Data (Sampling from a	
		population, Experimental and observational studies)	
Week 2	2.1 - 2.3	Describing Data (Categorical and quantitative variables), Outliers	
Week 3	2.4 - 2.5	Boxplots, histograms, scatterplots, correlation, linear regression, residuals	
Week 4	2.6 - 2.7	linear regression, residuals, multivariable data visualizations, <i>Review Chapters 1-2</i> ,	
Week 5		Statistics Exam 1 (Chapters 1 – 2)	
	3.1-3.2	Confidence Intervals (Sampling distributions, interpreting confidence intervals)	
Week 6	3.3 - 3.4	Confidence Intervals (Bootstrap distributions, interpreting confidence	
		intervals)	
Week 7	4.1 - 4.2	Hypothesis Testing (Intro to hypothesis testing, p-values, statistical	
		significance, formal conclusions of tests)	
Week 8	4.3 – 4.5	Randomization distributions, relationship between CI and HT	
Week 9		Review Chapters 3 – 4, Statistics Exam 2 (Chapters 3 – 4)	
Week 10	5.1 - 5.2	Inference with Standard Normal and Normal probability distributions	
Week 11	6.1	Confidence Intervals and Hypothesis Tests for Single Proportions and Single	
	-	Means; includes checking basic assumptions and SE calculations	
Week 12	6.3	Confidence Intervals and Hypothesis Tests for Difference of Proportions	
Week 13	6.2	Confidence Intervals and Hypothesis Tests for Single Means; includes	
		checking basic assumptions and SE calculations	
Week 14	6.4-6.5	Confidence Intervals and Hypothesis Tests for Difference of Means and	
		Matched Pairs, Review of Chapter 6 Material	
Week 15		Test on Chapter 6	
		Review for Cumulative Final Exam	
		Final exam Thursday from 10:15 – 12:15 pm in	

#### **COURSE OUTLINE:** *This timeline is approximate and subject to change.*