"Facts are stubborn, but statistics are more pliable."

Mark Twain

Syllabus for: Mathematics 15, Elementary Statistics	
Semester & Year:	August 22 - December 12, Fall 2015
Course ID and Section Number:	Math 15 V8004
Number of Credits/Units:	4
Day/Time: **Location:**	Online
Instructor's Name:	Michael Butler
Contact Information:	Email: Michael-butler@redwoods.edu or through Canvas.

Course Description: The study of statistical methods as applied to descriptive statistics and inferential statistics. An emphasis on the meaning and use of statistical significance will be central to the course. Students will use frequency distributions, graphs, measures of relative standing, measures of central tendency, measures of variability, correlation, and linear regression to explore descriptive statistics. Students will use the laws of probability and statistical tests (t-tests, chi-square, ANOVA, and regression analysis) to make decisions via hypothesis testing and estimate parameters using confidence intervals.

Student Learning Outcomes:

(1) Accurately communicate statistical ideas using correct statistical notation, graphs, and vocabulary.

(2) Use descriptive and inferential statistics to solve real-world problems.

(3) Demonstrate appropriate use of technology in making decisions based upon real-world data.

(4) Read and interpret information that contains statistical analysis and be able to communicate these results.

(5) Judge the validity of research reported in the mass media and peer reviewed journals.

Special accommodations: College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS.

Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

The student code of conduct is available on the College of the Redwoods website at:

http://redwoods.edu/District/Board/New/Chapter5/AP%205500%20Conduct%20Code%20final%2002-07-2012.pdf

Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods homepage.

College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

Computer Skills: Online courses require adequate computer skills. You should be able to navigate the course websites, open and download files, use a word processor and submit files to the class website. We will be using the software package R and the interface RStudio in our investigation of statistics and as our primary tool for writing up homework assignments. It is your responsibility to meet the technological demands of the course but there will be lots of support to help you meet those requirements.

Computer Requirements: Most computers and internet providers are adequate. You should have high-speed internet (such as broadband) service from cable, DSL, or satellite providers as there are required multimedia assignments. You need to have reliable access to the internet at least four days a week for 10 weeks. Anticipate problems with your computer and internet access (including power outages) by not waiting until the last minute to submit assignments. ***Portable Devices vs. Computers:*** *You will not be able to participate in this class solely from a portable device*. The software we will be using to do our work requires a Mac or a PC. If you do decide to use your portable device for some of your class work, use the free Canvas app (called "Canvas by Instructure") available in iTunes (for iOS) and the Google Play Store (for Android) instead of trying to connect to Canvas using a web browser on your portable device. Your experience will be a lot better using the app, but will still not substitute for having regular access to a computer to complete work in this course.

Required Resources:

(1) Text: OpenIntro Statistics 3ed. You can get the text for free as a pdf from https://www.openintro.org/stat/textbook.php or a printed copy from Amazon (link on OpenIntro site).

(2) The software packages R and RStudio installed on your computer. There is a video in the Course Introduction Module showing how to install these software packages on our Canvas site.

(3) A Composition Book to create a "Statistics Quick Reference" book in. Details on this book are provided in the Course Introduction Module.

Student Commitment: This course requires at least 10+ hours per week for sixteen weeks of your time. You will need to carefully read assigned reading from the text, watch videos, participate in online discussions, complete weekly quizzes, and complete exercises and labs from the text. Conscientiousness, attention to details, and skills in reading and writing are critical for success. It is **not** expected that you have any previous experience in the use of the R software package.

Instructor Commitment: I access the class website regularly and respond to posted questions and messages usually within 24 hours and no later than 48 hours. Additionally, I participate in the discussions. There is also regular instructor-based communication with weekly announcements, lectures, and evaluative feedback to your discussion posts.

Class Environment: It is expected that everyone involved in this class, teachers and students alike, will act in a manner conducive to providing a comfortable environment for learning, a place where students feel free to ask and answer questions without fear of embarrassment or ridicule. It is important to stay on task. Hence, posts to Canvas that do not pertain to the subject at hand will be removed. If you have an issue with another student's posts, please direct those concerns to me. It is essential for student success to maintain a good environment in our virtual classroom. If you have any difficulties with the learning environment, please send me an email with your phone number with a time to contact you. The official **Student Code of Conduct (AP5500)** can be read at: http://redwoods.edu/district/board/new/chapter5/

Homework : The Modules link in Canvas are where you will find the homework assignments. All homework assignments will be typed up in RStudio and submitted to Canvas as an .html file. Homework is an essential part of this course and if you want to succeed, you need to make a commitment now to staying up with the homework. There is a course video in the introductory module showing how to submit homework. Part of your homework will be to evaluate your peer's submissions and provide feedback.

Writing Assignments: There will be writing assignments posted to the Discussion area in Canvas for each module. Most of these writing assignments are based on the current material being covered. There purpose is to help you find clarity in the concepts presented and to give you an idea of what content should be entered into you Reference Book.

Reference Book: You will be building a "Statistics Quick Reference Book" during the course that you will find invaluable during the quizzes and exams. If you are planning on taking a second course in statistics, this reference book will also be of use there. Please buy a composition book to build this reference book in. You are allowed to use the book on all quizzes and the two exams (midterm and final). Full details on how build this valuable resource can be found in Course Introduction Module.

Quizzes: There will be a short quiz at the end of each module taken via Canvas. The quizzes will generally be between 5 and 10 questions and come from the current weeks homework and videos. Again, your Reference Book will be of great assistance in completing the quizzes since you will be allowed to use it during quizzes. No makeup quizzes are allowed without prior arrangements. The quizzes are timed at between 20 to 40 minutes. If you are try to use the text or other resources for help, you will run out of time prior to completing the quiz. Keep in mind it is your education we are working on here and that you are expected to adhere to the Student Code of Conduct when taking quizzes and exams.

Exams: There will be two exams in this course given using the testing system in Canvas. Again, you are expected to adhere to the student code of conduct when taking these exams. You will be allowed to use your Reference Book with the cumulative notes that you have been keeping there. You are not allowed to use your text or other websites during these exams. Since the exams are timed (2 hours), you will not be able to complete them if you are using your text and other resources. The exams will **not** be proctored.

Attendance: There is a Discussion in Module 0 where you will find an introduction from your faculty member and where you are expected to post an introduction of yourself to the class. IF YOU DO NOT POST AN INTRODUCTION BY THE END OF THE FIRST WEEK IT WILL BE ASSUMED THAT YOU HAVE CHANGED YOUR MIND ABOUT TAKING THIS COURSE AND YOU WILL BE WITHDRAWN. For the duration of the class you must be showing progress by completing assignments on time and by participating in writing assignments posted in Canvas.

Course Schedule (note that this is subject to modification)

Dates	Topics	Assignments
Week 0ne **Aug 24 - Aug 30**	**Module 1** **Introduction to Course** **Introduction to Data:** Designing Studies, Exploratory Data Analysis	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**

Week Two **Aug 31 - Sep 6**	**Module 2** **Introduction to Data:** Designing Studies, Exploratory Data Analysis	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**
Week Three **Sep 7 - Sep 13**	**Module 3** **More on Data :** Proper summary of data, plots of numeric and categorical data. Beginnings of inference	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**
Week Four **Sep 14 - Sep 20**	**Module 4** **Probability:** Conditional probability, Normal distribution, Binomial Distribution	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**
Week Five **Sep 21 - Sep 27**	**Module 5** **More on Probability:** Normal distribution, Binomial Distribution	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**
Week Six **Sep 28 - Oct 4**	**Module 6** **Foundations for Inference:** Normal approximation to the Binomial, Variability in estimates and the Central Limit Theorem, Confidence intervals	**Read Text** **Watch Videos** **Work**

		Exercise **Discussions** **MIDTERM**
Week Seven **Oct 5 - Oct 11**	**Module 7** **More on Foundations for Inference:** Hypothesis tests, Inference for other estimators, Decision errors, significance, and confidence	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**
Week Eight **Oct 12 - Oct 18** **MIDTERM THIS WEEK**	**Module 8** **More on Foundations for Inference:** Hypothesis tests, Inference for other estimators, Decision errors, significance, and confidence	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**
Week Nine **Oct 19 - Oct 25**	**Module 9** **Inference for numerical variables:** Comparing two means, Bootstrapping, Inference with the t-distribution, Comparing three or more means	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**
Week Ten **Oct 26 - Nov 1**	**Module 10** **More on Inference for numerical variables:** Comparing two means, Bootstrapping, Inference with the t-distribution, Comparing three or more means	**Read Text** **Watch Videos** **Work Exercise** **Discussions** **Quiz**
Week Eleven	**Module 11**	**Read Text**

Nov 2 - Nov 8	**Inference for categorical variables:** Single proportion, Comparing two proportions, Inference for proportions via simulation	**Watch Videos** **Work Exercise** **Discussions**
Week Twelve	**Module 12** **More on Inference for categorical variables** Comparing three or more proportions (Chi-square), Relationship between two numerical variables	**Read Text** **Watch Videos** **Work Exercise** **Discussions**
Week Thirteen	**Module 13** **Introduction to Regression:** Linear regression with a single predictor, scatterplots, residual plots, correlation	**Read Text** **Watch Videos** **Work Exercise** **Discussions**
Week Fourteen	**Module 14** **More on Regression:** Inference in regression	**Read Text** **Watch Videos** **Work Exercise** **Discussions**
Week Fifteen	**Module 15** **Course Summary:** Mixed review of problems and techniques from the course	**Read Text** **Watch Videos** **Work Exercise** **Discussions**
Week Sixteen **Final Exam Week**	**Module 16** **Final Exam:** Written and Canvas Quiz.	**Read Text** **Watch Videos** **Work Exercise**

		Discussions

Technical Support:

Before contacting Technical Support please visit the Online Support Page

(Links to an external site.)

For access issues with Canvas, Web Advisor or your mycr.redwoods.edu Email, contact Technical Support at its@redwoods.edu or call 707-476-4160 or 800-641-0400 ext. 4160 between 8:00 A.M. and 4:00 P.M., Monday through Friday.

Tutoring and Additional Help:

There are Discussions in each module that are there for asking questions about assigned problems from the text. Please make this your first stop for asking questions. If you email me a question, I will reply to you in Discussions so others can also benefit from your query. There will be several optional assignments during the course that can help you regain points if you fall behind. More information about that can be found in the Course Introduction Module.

I do requests! If you are finding the explanations in the videos are not enough, you can request additional problems to be worked on video. It usually takes about 48 hours to turn it around, so ask early if possible.

There is free tutoring in the Math Lab on the CR Eureka campus. If you live in the Eureka area, then you should consider signing up for the non-credit Math 252. It is a free course that allows you access to the tutors in Math Lab.

Any questions of concerns, please email me at michael-butler@redwoods.edu

Disclaimer: I make every attempt to provide accurate information in this syllabus. If there are errors or the need for a change in policy, I will inform you of the changes prior to implementation.