Syllabus for [*name of class here*] – Eureka Campus		
Semester & Year	Spring, 2016	
Course ID and Section #	Math-102-E9687	
Instructor's Name	G. Todd Olsen	
Day/Time	MW 11:40AM – 2:10PM, 3:00PM – 4:25PM	
Location	SC202	
Number of Credits/Units	5Lec/1Lab	
Contact Information	*Office location*	CA128
	Office hours	By Appointment
	Phone number	707-476-4229
	Email address	todd-olsen@redwoods.edu
Textbook Information	*Title & Edition*	N/A
	Author	
	ISBN	

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. Formulate questions that can be addressed with data, then organize, display, and analyze relevant data to answer these questions and communicate results.
2. Use the properties of algebra to simplify expressions, solve equations and answer questions in context.

Construct, use, and interpret mathematical models, specifically linear and exponential functions, to represent relationships in quantitative data.

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 at 707-476-4280.

Academic Support

Academic support is available at Counseling and Advising and includes academic advising and educational planning, Academic Support Center for tutoring and proctored tests, and Extended Opportunity Programs & Services, for eligible students, with advising, assistance, tutoring, and more.

Academic Honesty

In the academic community, the high value placed on truth implies a corresponding intolerance of scholastic dishonesty. In cases involving academic dishonesty, determination of the grade and of the student's status in the course is left primarily to the discretion of the faculty member. In such cases, where the instructor determines that a student has demonstrated academic dishonesty, the student may receive a failing grade for the assignment and/or exam and may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct (AP 5500) is available on the College of the Redwoods website at: www.redwoods.edu/district/board/new/chapter5/documents/AP5500StudentConductCodeandDisciplinaryProceduresrev1.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 website.

Disruptive Classroom Behavior

Student behavior or speech that disrupts the instructional setting will not be tolerated. Disruptive conduct may include, but is not limited to: unwarranted interruptions; failure to adhere to instructor's directions; vulgar or obscene language; slurs or other forms of intimidation; and physically or verbally abusive behavior. In such cases where the instructor determines that a student has disrupted the educational process a disruptive student may be temporarily removed from class. In addition, he or she may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct (AP 5500) is available on the College of the Redwoods website at: www.redwoods.edu/district/board/new/chapter5/documents/AP5500StudentConductCodeandDisciplinaryProceduresrev1.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 website.

Emergency Procedures for the Eureka campus:

Please review the campus evacuation sites, including the closest site to this classroom (posted by the exit of each room). The Eureka **campus emergency map** is available at: (http://www.redwoods.edu/Eureka/campus-maps/EurekaMap_emergency.pdf). For more information on Public Safety, go to http://redwoods.edu/safety/ In an emergency that requires an evacuation of the building:

- Be aware of all marked exits from your area and building.
- Once outside, move to the nearest evacuation point outside your building:
- Keep streets and walkways clear for emergency vehicles and personnel.
- Do not leave campus, unless it has been deemed safe by the Incident Commander or campus authorities. (CR's lower parking lot and Tompkins Hill Rd are within the Tsunami Zone.)

RAVE – College of the Redwoods has implemented an emergency alert system. In the event of an emergency on campus you can receive an alert through your personal email and/or phones at your home, office, and cell. Registration is necessary in order to receive emergency alerts. Please go to https://www.GetRave.com/login/Redwoods and use the "Register" button on the top right portion of the registration page to create an account. During the registration process you can elect to add additional information, such as office phone, home phone, cell phone, and personal email. Please use your CR email address as your primary Registration Email. Your CR email address ends with "redwoods.edu."

Please contact Public Safety at 707-476-4112 or security@redwoods.edu if you have any questions.

Course Syllabus

Course Name: Pathway to Statistics
Course Name: Pathway to Statistics
Meeting days, times and location - Mondays and Wednesdays, 11:40AM – 2:10PM and 3:00pm - 4:25PM, SC202.

Math 102 is an accelerated one-course math path to college-level statistics, Math 15. This unique course is designed especially for students who do NOT plan to major in math, science, computer science or business. It is NOT a prerequisite for any course and is not equivalent to any other math course. This course should be thought of as part of a "multiple measures" rubric, similar to a placement test, and successful completion of this course qualifies students to be *placed* into Math 15. This course is not transferable to any other college or university.

While mathematics forms the analytical backbone for statistics, mathematical thought and statistical thought are quite different. In mathematics there is absolute truth and right and wrong answers. This is because mathematics depend on axiomatic systems (Links to an external site.)
and nothing in mathematics is considered true unless it is proven based on axioms and previous proofs. In this way, we have absolute but hypothetical truth in mathematics. Often mathematical ideas model the physical world surprisingly well. Newton's laws, for example, can be used to model the position of a falling object, but (and here is the rub) only if we ignore air resistance, the affects of wind gusts, etc. Naturally, there are more and more complex mathematical models that account for air resistance, Einstein's General Relativity, and so on, but at the end of it all, no mathematical model can predict exactly where the object will be without some margin of error.

Another key distinction between mathematics and statistics is that mathematics is deterministic meaning that to predict the position of a falling object, one uses a formula that determines the position of the falling object. On paper the position of the object is exact and there is generally one correct answer determined by doing some algebra. The problem with using deterministic models to predict real world phenomenon can be summed up with one word - *variation*.

Let's take the falling object example one step further. Suppose we drop an object, say a bowling ball, from an airplane 5000 feet off the ground 10 times. The deterministic, mathematical equation tells us that the bowling ball will be in the same exact position at say 8 seconds for all 10 ball drops. But, is this what really happens? The answer is *no* in so many ways. Air density is not uniform so air resistance changes, there are affects of wind, the ground is not level and the list goes on. There will be variation in the ball's position from one drop to the next. This is the nature of the real world.

Statistics in large part is about understanding and quantifying the inherent variation that is part of every decision, estimation or prediction we make. Statistics uses real data from real populations to draw inferences about these populations. Statistically speaking truth is elusive, and in statistics the word *proven* is replaced by *confident*. We could, for example, use math to prove that the bowling ball will be 3976 feet from the ground after 8 seconds, but this is in the hypothetical math world where the ground is represented by a perfect, mathematical plane, there is no air or wind for that matter. In statistics we would say that we are confident that the ball will be between 3926 and 4026 feet and how confident will depend in large part on how much variation we measure from the 10 ball drops. So, statistics is really more about critical thinking, interpretation, and making the best decision based on what is likely to be true. Some find statistics courses *more* difficult and frustrating than math courses because there generally is no one right answer and simply writing down a number with no explanation is not acceptable or useful.

Many people enjoy doing math because it can be like playing a game. Finding the correct solution is like winning, and the truly imaginative, elegant solution has an aesthetic akin to Michael Angelo's The Last Judgement
(Links to an external site.)
that can through its shear artistic power cause one to reevaluate their beliefs. This masterpiece may well reflect the truth - God exists and will judge us, but this work is not based on data or analysis. It is Michael Angelo's interpretation of what is true and was also commissioned and influenced by the Pope(s). As arguably the greatest artist that ever lived his work may well have been divinely inspired. The point here is not that one way of thinking is better than the other, but simply that they are different and require a different type of skill and preperation. To do science and statistics one must set aside beliefs to study and objectively analyze data. In statistics problems are created and discussed in a real world context. We may isolate a particular variable or factor of interest and create a theory about it, but it is rarely ever the case that this single variable tells the whole story. The real world is far too complex and inner related for this to be the case.

Math 102 is designed specifically to teach only the math ideas used in statistical analysis and to take a step further by focusing on the critical thinking, reading and writing skills that are also necessary to understand and excel in statistics courses. We will be doing math but not in the traditional ways. You will not be asked to sit quietly during a lecture and be assigned lists of rote problems from the end of each section of a textbook. This course is designed around the principles of active learning and productive struggle leading to deep learning and understanding. The focus here is to

connect concepts and communicate ideas. The keys to success in this course will be cooperation, an open mind, a positive attitude, and growth mindset. We will work hard together, make mistakes together, and be surprised together by how far we have come. To watch an introductory video, click here ->
Introduction
(Links to an external site.)

(Links to an external site.)
Instructor: Garrett "Todd" Olsen

Course Outcomes:

3. Formulate questions that can be addressed with data, then organize, display, and analyze relevant data to answer these questions and communicate results.
4. Use the properties of algebra to simplify expressions, solve equations and answer questions in context.
5. Construct, use, and interpret mathematical models, specifically linear and exponential functions, to represent relationships in quantitative data.

Computer Skills: Success in modern college courses depends in part on adequate computer skills. Students must be able to navigate the course website, open and download files, use a word processor and convert files to portable document format

(.pdf), and submit files to the Canvas course website. Technological support is available via multiple face-to-face and online sources, and I will assist you with this aspect or help you find the most appropriate source for help if needed.

Required Course Materials:

- A composition book - college ruled.
- TI 83/84 graphing calculator.
- USB Flash Drive.
- Pencil, eraser, and ruler.
- The book *Outliers (Links to an external site.)* by Malcolm Gladwell.
- Access to a modern computer.
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Grading:

Category	Weight
Journal	15%
Reading Quizzes	10%
Activities	25%
Projects	30%
Participation	20%

Journal: Throughout the semester you will be given writing assignments that are to be done a kept in this journal. Sometimes these assignments will be in class other times they will be part of a homework assignment. Periodically I will collect and grade your journal entries. You will not be graded on spelling or grammar but rather on the thoroughness and level of critical thinking your responses demonstrate.

Reading Quizzes: Most weeks you will be given reading assignments from a variety of sources and each week there will be a quiz consisting of questions and short essays based on these reading assignments. These quizzes will be administered outside of class via Canvas' "Quizzes" tool and will be open book. However, these quizzes will have time limits. You are strongly encouraged to do all the reading before attempting the quiz because it is unlikely that you will have enough time to search for and comprehend the ideas from the readings in the time allowed for the quiz. Doing the reading assignments is an essential part of effective participation, and the purpose of the reading quizzes is to verify that you have done the necessary reading on time.

Activities: This is an activity based course, and you will be assigned activities throughout the semester. Most of these activities will be done in groups in class and sometimes finished as homework. Coming to class is essential for a good grade in this category.

Projects: Projects require you to analyze a real-life data set to answer a research question. Typically these projects will consist of the following three graded parts:

1 A proposal as response to an RFP (Request For Proposals).

2 A final report that includes necessary calculations, graphs and charts, and written analysis.

3 A PowerPoint presentation to the class.

All projects will be done as group efforts. Naturally each group member will have

particular areas of skill and experience, and the idea is for each group to organize around these attributes to best accomplish the requirements of the project.

Participation: As this is an activity based course that is structured around group work, your participation is essential for both your learning and your group members' learning. Your grade for this category will be based on your attendance and the effort put into in class activities and projects. Sitting back and allowing others in your group to do the work is not acceptable, and during class I will be engaging with groups and monitoring each student's participation.

Code of Conduct: **Please familiarize yourself with the Student Code of Conduct Standards in the college catalogue under campus policies and regulations. It is required that you do your own work. All papers, postings, activities, and exams must be competed by you without assistance. Any source used external to the course must be cited. Please be respectful to your classmates and be kind and considerate in all of your postings and responses.**