CR COLLEGE

Syllabus for Math 15-E7274

Introduction to Statistics (Fall 2019)

Course Information

Semester & Year:	Fall 2019
Course ID & Section #:	Math-15-E7274
Instructor's name:	Tami Matsumoto
Day/Time:	MWF 1:15-2:30pm
Location:	SC208 at College of the Redwoods Eureka Campus
Number of units:	4 units

Instructor Contact Information

Office location:	SC 205B, behind copier upstairs in SC Bldg
Office hours:	Wed 2:45-3:45; TTh 12:30-1:00. Note: I'll be in MathLab Mondays 3:00-4:30
	Also available by chance and by appointment.
Phone number:	Office: (707) 476-4543
Email address:	tami-matsumoto@redwoods.edu Note: include "Math15" as part of the Subject line
Social Media: https://tv	witter.com/TamiMathCR, https://www.instagram.com/TamiMathCR/, https://www.facebook.com/TamiMathCR

Required Materials

Textbook Title:	Interactive Statistics, 3 rd Edition	Interactive
Edition:	3rd	harites
Author:	Aliaga & Gunderson	
ISBN:	ISBN-10: 0-13-149756-1; ISBN-13: 978-0-13-149756-6	
Other required materials:		Northa Ringi Brenda (Janimum
•	Graphing Calculator: A TI-83 or TI-84 graphing calculate	ted

number are available for rent from the Math Lab in the ASC.

• **Bound Notebook with Grid Paper**: Something like Roaring Spring #77475 or Ampad #26-251 (about \$2 - \$6), for example. It should be bound and have graph paper in it. You will use this throughout the course to build yourself a reference book.

Math 15 Catalog Description

MATH-15 Introduction to Statistics

Prerequisite: Completion of Intermediate Algebra or appropriate placement based on AB 705 mandates. An introduction to basic concepts of descriptive and inferential statistics, with emphasis on the meaning and use of statistical significance. Students will use probability techniques to make decisions via hypothesis testing and will estimate parameters using confidence intervals. The course includes applications from a variety of technical and social science fields.

Note: The MATH-15S support course is strongly recommended to take concurrently for students without previous mathematical experience in courses such as Algebra II or Pathway to Statistics.

Course Student Learning Outcomes (from course outline of record MATH-15_COR 11.09.18.pdf)

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

2. Use descriptive and inferential statistics to better understand 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.

Final Course Grade

For "A/A-" you must do all of the following:

- Participate in class with at least 90% of in-class work completed satisfactorily*
- Homework: complete at least 90% of Practice Problems; do 90% of "Basic" problems in a legible, satisfactory way; have good work done on majority of "Advanced" problems.**
- Reference Book: Create your own excellent Statistics Reference Book with Title Page, all or most topics covered with a corresponding Table of Contents.
- Exams/Quizzes: at least 85% average
- Data Projects: at least 90% average

For "B-/B/B+" you must do all of the following:

• Participate in class with at least 80% of in-class work completed satisfactorily*

• Homework: complete at least 85% of Practice Problems; do 80% of "Basic" problems in a legible, satisfactory way; have good work done at least some "Advanced" problems.**

• Reference Book: Create your own good Statistics Reference Book with Title Page, majority of topics covered with a corresponding Table of Contents.

- Exams/Quizzes: at least 75% average
- Data Projects: at least 80% average

For "C-/C/C+" you must do all of the following:

- Participate in class with at least 70% of in-class work completed satisfactorily*
- Homework: at least 70% of Practice Problems; 70% of "Basic" problems in a legible, satisfactory way**
- Reference Book: Create your own basic Statistics Reference Book.
- Exams/Quizzes: at least 65% average
- Data Projects: at least 70% average

For "D" you must do all of the following:

- Participate in class with at least 60% of in-class work completed satisfactorily*
- Homework: complete a majority of Practice Problems and "Basic" problems in a legible, satisfactory way**
- Reference Book: Create your own Statistics Reference Book.
- Exams/Quizzes: at least 50% average
- Data Projects: at least 60% average

For determination of +/- course grades, the entire class spread will be considered at the end of the term.

*regarding in-class work, exceptions are allowed if make-up arrangements are made in advance and missed work is made up ** Homework includes problems from the textbook, along with other handouts and assignments.

Due Dates: Each assignment will have a "due date" associated with it. Homework assignments will generally have a "due date" of the next class; you should try to finish the assignment before the next class, but, if you have questions, you can get help and then finish up the assignment and turn it in at the following class (without being considered late). December 20 is the last day to submit any late work. Work that is returned for revision will have revised "due dates" (and will not be considered "late").

Homework:

General Guidelines:

- 1. When you turn in your homework, if there are multiple pages, please make sure they are in the correct order. Also do not run problems into each other each problem should be clearly marked and easy to find.
- Label each homework assignment clearly in the <u>center at the top</u> with the assignment number, such as "PP #1" (Practice Problems) or "Basic #1" or whatever *number* it is.
- 3. At the top right side of the page, write **your name** and "**Math 15**" and the **date**.
- 4. <u>Please use pencil, and erase carefully</u>, when necessary.
- 5. Label problems clearly.
- 6. With textbook homework, check all your answers in the back of the book or in the Solutions Manual before turning it in. It is your responsibility to check your work and get help if and when you have questions.

There will be three categories of assignments: : "Practice Problems" and "Basic" and "Advanced." Everyone is expected to do "Practice Problems" and "Basic" problems to turn in. You only need to do "Advanced" problems if you want a grade higher than C.

- Label "Practice Problems" clearly and do them all together on the same page(s). These are for practice and it's ok if they look like "scratch" work, but number each problem clearly. For "Practice Problems," it's ok to just turn in the answers, if no written work is needed. (Keep the "Basic" and "Advanced" separate from "Practice Problems").
- "Basic" and "Advanced" should be labeled clearly and separately from Practice Problems.
 For these, *paraphrase the question* you do not need to copy all the words of the question exactly as in the book, but you should write enough so that anyone looking at it (who does not have the book in front of them) can tell what it was that you were supposed to do. Show your work <u>do not just turn in a list of answers</u>.

Other than problems in the book, some assignments will be on handouts, and some assignments will pertain to reading statistical results in newspaper or magazine articles and interpreting them, or analyzing data given to you, and asking you to think critically. One of the main goals of this course is for you to learn to think critically and analyze statistical claims on a more educated level, so we will practice doing that throughout the course.

Reference Book: — You will be constructing your own personal "Statistics Reference Book" throughout the course (see "Bound Notebook with Grid Paper" under "Other Required Materials"). Follow the separate instructions. There will be some specific directions prescribing some of the contents, and you will also have freedom to include other pertinent information, definitions, examples, notes, that you think will be helpful for you as reference material. *Create a Reference Book that helps your future <u>You</u>!*

Exams and Quizzes:

- <u>Short Quizzes</u> We will have short quizzes often. Some will be online and some will be in class. These quizzes are important for letting us know how you are doing and what needs further work (important for both you and me to know). Some will be "Reference Book Quizzes" ones where you will be allowed to use your Reference Book (but NOT your text or other notes) to help you with the quiz.
- <u>Unit Exams</u> Each Unit has a Unit Exam of approximately 45 minutes, which will focus on the material from that Unit.
- <u>Final Exam</u> Comprehensive Final Exam during Finals Week: Wednesday December 18.

<u>Data Projects</u>:— There will be several short assignments for you to do that involve analyzing data, and turning in written assignments. Details will be provided separately.

Prerequisites/co-requisites/ recommended preparation

Completion of Intermediate Algebra or appropriate placement based on AB 705 mandates.

Institutional Policies

Special accommodations statement (*required for online classes)

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 accommodations, please see me or contact <u>Disability Services and</u> <u>Programs for Students</u>. Students may make requests for alternative media by contacting DSPS based on their campus location:

- Eureka: 707-476-4280, student services building, 1st floor
- Del Norte: 707-465-2324, main building near library
- Klamath-Trinity: 530-625-4821 Ext 103

Student Access (*required for online classes)

These standards are required by federal regulation. Students will have access to this course that complies with the Americans with Disabilities Act of 1990 (ADA), Section 508 of the Rehabilitation Act of 1973, and College of the Redwoods policies. Course materials will include a text equivalent for all non-text elements; videos will include closed captioning, images will include alt-tags, hyperlinks will use descriptive/meaningful phrases instead of URLs and audio files will include transcripts. All text will be formatted for use with screen readers and all course materials will be understandable without the use of color. Students who discover access issues with this class should contact the instructor.

Academic dishonesty

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. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the <u>College Catalog</u> and on the <u>College of the Redwoods website</u>.

Disruptive 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, the student 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. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the <u>College Catalog</u> and on the <u>College of the Redwoods website</u>.

Policies for this Class

In-Class Participation — It is extremely important that you attend each and every class session and participate and keep up. We cover 15 chapters in about 40 classes and it's nearly 1000 pages! That's about 25 pages per day class session, on average. *If you miss more than four class sessions, you may be dropped from the course*.

During class we will have "Let's Do It!" activities. Sometimes collaboration via small-group work is allowed (even encouraged and expected), but you are still responsible for completing your own work. We will also often have group discussions, and you are expected to participate both as an active listener and as a contributor. Participation in this fast-moving class is essential for your success! I plan to record attendance each day and note students who are tardy, or

who leave early, or who are not participating. If you have an issue that prevents you from attending (and paying attention) for an entire class period, I would appreciate it if you would advise me of that (I do not need details), and work out a "recovery plan" so that you don't lose out on too much information.

Communication Guidelines

To communicate with me outside of class, email or messaging via Canvas is generally fine. Please know, though, that these methods are not completely reliable; if you have not gotten a response the same day (or within 24 hours), please re-send your message using the other method (so if you emailed, try Canvas next). Phoning is also fine, but if you left a voicemail and have not gotten a timely response, please try another method (such as Canvas messaging) because often voicemail messages are difficult to hear clearly (sometimes due to your cell phone and your location when you call).

For me to communicate with you during this quick-moving course, I expect you all to have online access for email and Canvas, as well as for other online resources. To communicate with the entire class at once, I will generally post an Announcement in Canvas; with more pressing information, I might also send a Canvas "message" to the entire class.

I expect you to have access to email and I expect to be able to contact you easily. The College uses your "*mycr.redwoods.edu*" email address to communicate with you so it is important that you receive those email messages. Note that you can set it up to autoforward to another email address if you prefer. Instructions for autoforwarding are available online. Similarly, Canvas messages can be set to autoforward to your personal email, if you prefer. Regarding student privacy rights: legal rights of students prevent information from being disclosed to anyone (including parents/guardians) without the student's prior written consent.

<u>Time</u>. Plan on devoting Lots!! In your own weekly schedule it is strongly recommended that you have blocked out 12 to 15 hours <u>per week</u> to devote to this class. The book is 15 chapters in about 1000 pages!

Information for this Class

1. About Learning Statistics

To learn statistics, you must learn a lot of new terminology (including "old" vocabulary with new meanings), special symbols, formulas, relationships, and concepts. And that's not all! You also must learn how and when to apply which formulas, and how to interpret statistical results. It isn't enough to know how to do algebraic manipulations, or how to find things on your calculator. You will need to learn which are correct formulas (or statistical tests), that are appropriate for a given situation. Also, unlike the majority of your previous math experience, there often is not just one "right" answer. You will need to understand assumptions behind different answers and how to assess which answer you feel is best.

Sometimes students feel like the whole class is full of word problems and sometimes even students with excellent algebraic skills struggle with statistical concepts and interpretations.

On the other hand, some people who have had bad prior experiences with math classes really enjoy the way statistics is much more real and meaningful and applicable to the real world.

You will need to learn (a la Bloom):

- Knowledge
 - Definitions
 - Types of Graphs
 - Different Formulas
- Comprehension
 - o How related things compare (similarities, differences)

- How to interpret summary information 0
- How to make inferences/predictions based on limited information 0
- Application
 - How to apply what you know to new situations 0
 - How to make use of information (statistics or data, for instance)
 - How to solve problems, using what you have learned

Analysis

- How to make inferences from analysis of complex information 0
- Recognizing importance and significance of component parts 0
- Synthesis
 - How to understand a situation and pull together all that you have learned, to construct an appropriate 0 statistical test and make valid conclusions and inferences
- Evaluation
 - o Look back and assess what was done (by you or others) to compare and evaluate results

2. Learning Units — What material will we cover?

The course material is organized into five Learning Units, with three chapters in each At the end of each Unit, there will be a Unit Exam and a grade update.

Unit	Chapter Titles, pages	tentative exam dates
1	Chapter 1: How to Make Decisions with Statistics (pp 1-52, 62-66)	Unit 1 Exam:
	Chapter 4: Summarizing Data Graphically (pp 211-284)	Fri Sept 13
	Chapter 5: Summarizing Data Numerically (pp 299-333, 344-5)	(45 minutes)
2	Chapter 6: Using Models to Make Decisions (pp 357-397)	Unit 2 Exam:
	Chapter 7: Probability (pp 409-439, 454-470, 478-489)	Wed Oct 2
	Chapter 2: Sampling Designs (pp 83-135)	(45 minutes)
3	Chapter 8: Sampling Distributions (pp 499-545, 555-7)	Unit 3 Exam:
	Chapter 9: Making Decisions About Population Proportions (pp 563-594, 602-7)	Fri Oct 18
	Chapter 10: Making Decisions About Population Means (pp 613-33, 639-53, 657-8)	(45 minutes)
4	Chapter 3: Observational Studies & Experiments (pp 145-196)	Unit 4 Exam:
	Chapter 11: Comparing Two Treatments (pp 669-727)	Mon Nov 4
	Chapter 12: Comparing Many Treatments (pp 743-761, 791-3)	(45 minutes)
5	Chapter 13: Regression Analysis (pp 807-901)	Unit 5 Exam:
	Chapter 14: Analysis of Count Data (pp 921-966)	Fri Dec 6
	Chapter 15: Nonparametric Statistics (pp 977-1002)	(45 minutes)

Note: Comprehensive Final Exam on Units 1-5 on Wed., December 18, 1:00-3:00pm (2 hours)

Canvas and Technology

Preferred Name in Canvas

Students have the ability to have an alternate first name and pronouns to appear in Canvas. Contact Admissions & Records to request a change to your preferred first name and pronoun. Your Preferred Name will only be listed in Canvas. It does not change your legal name in our records. See the Student Information Update form.

Canvas Information

If using Canvas, include navigation instructions, tech support information, what Canvas is used for, and your expectation for how regularly students should check Canvas for your class.

Log into Canvas at https://redwoods.instructure.com

Password is your 6 digit birth date

Technology skills, requirements, and support (required for online classes)

Tech equipment and skills are required for student success, and of equal importance as required textbooks and materials,

Students can obtain a free Office 365 license (includes Word, Excel, PowerPoint and more) with a valid CR email.

Before contacting Technical Support please visit the <u>Online Support Page</u>. For password issues with Canvas, Web Advisor or your mycr.redwoods.edu email, contact <u>its@redwoods.edu</u> or call 707-476-4160 or 800-641-0400 ext. 4160 between 8:00 A.M. and 4:00 P.M., Monday through Friday.

Gender-Inclusive Language in the Classroom

College of the Redwoods aspires to create a learning environment in which all people feel comfortable in contributing their perspectives to classroom discussions. It therefore encourages instructors and students to use language that is gender-inclusive and non-sexist to affirm and respect how people describe, express, and experience their gender. Just as sexist language excludes women's experiences, non-gender-inclusive language excludes the experiences of individuals whose identities may not fit the gender binary, and/or who may not identify with the sex they were assigned at birth. Gender-inclusive/non-sexist language acknowledges people of any gender (for example, first year student versus freshman, humankind versus mankind, etc.), affirms non-binary gender identifications, and recognizes the difference between biological sex and gender expression.

Students have the ability to have an alternate first name and pronouns to appear in Canvas. Contact <u>Admissions &</u> <u>Records</u> to request a change to your preferred first name and pronoun. Your Preferred Name will only be listed in Canvas. It does not change your legal name in our records. See the <u>Student Information Update form</u>.

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: (<u>http://www.redwoods.edu/aboutcr/Eureka-Map</u>; choose the evacuation map option). For more information on Public Safety, go to <u>http://www.redwoods.edu/publicsafety</u>. 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.

Tip Line

Anyone wishing to make an anonymous report of a crime may use the tip line at 707.476.4555 Or by emailing <u>CRTip@redwoods.edu</u>.

Student Support Services

The following online resources are available to support your success as a student:

- <u>CR-Online</u> (Comprehensive information for online students)
- Library Articles & Databases
- <u>Canvas help and tutorials</u>
- Online Student Handbook

Counseling and Advising offers academic support and includes academic advising and educational planning

Learning Resource Center includes the following resources for students

- <u>Academic Support Center</u> for instructional support, tutoring, learning resources, and proctored exams.
- Library Services to promote information literacy and provide organized information resources.
- Multicultural & Diversity Center
- Math Lab & Drop-in Writing Center

Academic Support Courses

- Math Lab classes: Drop-in math help, during open hours. There are different math lab class options for Math 15 students: Math 52 or Math 252
- LIGHT Center classes open to all students: GUID 143, 145, 146, 147, 148, 205, 215.
 For information: 476-4290 (Eureka campus)
 NOTE: GUID classes can be taken by any students (even if not DSPS)
- ESL classes such as ESL 211 are free and support academic students. You can sign up in class!
- Math Review Courses: Math 301, Math 302, Math 303 short, 9 hours of class time total

Academic Support – Other Resources

- Academic Support Center (ASC) -- variety of services to help students succeed, including free tutoring and proctored testing. https://www.redwoods.edu/asc
 - Testing Center in ASC -- for make-up tests, and when accommodations cannot be made in the regular classroom: https://www.redwoods.edu/asc/Testing-Policies-Procedures/Accomodations
 - Tutoring Services -- free for all CR students, by appointment (you do not need to be enrolled in a Math Lab class to meet with an ASC Tutor). https://www.redwoods.edu/asc/Tutoring-Services
- Calculator Rental -- https://www.redwoods.edu/math/Resources/Calculator-Rentals
- Math Lab -- students must be registered in a Math Lab course to receive math help in the Math Lab. https://www.redwoods.edu/math/Lab
- Math Textbooks many available for check-out from Library; free textbooks online for Math 276, Math 376, Math 380, Math 120. <u>https://www.redwoods.edu/math/Free-Math-Textbooks</u>; also copies of texts in the MathLab class for use while you are there
- Mathematica Software -- https://www.redwoods.edu/math/Mathematica
- Online Practice in Mathematics, "OPTIMATH" -- http://msenux2.redwoods.edu/optimath
- Math Review website -- https://www.redwoods.edu/math/Resources-Algebra-Review

Special programs are also available for eligible students including:

• <u>Extended Opportunity Programs & Services (EOPS)</u> provides financial assistance, support and encouragement for eligible income disadvantaged students at all CR locations.

- The TRiO Student Success Program provides eligible students with a variety of services including trips to 4year universities, career assessments, and peer mentoring. Students can apply for the program in <u>Eureka</u> or in <u>Del Norte</u>
- The <u>Veteran's Resource Center</u> supports and facilitates academic success for Active Duty Military, Veterans and Dependents attending CR through relational advising, mentorship, transitional assistance, and coordination of military and Veteran-specific resources.
- Klamath-Trinity students can contact the CR KT Office for specific information about student support services at 530-625-4821
- The <u>Honors Program</u> helps students succeed in transferring to a competitive four-year school.

SERVICES FOR CR STUDENTS

- Child Development Center (CDC) -- subsidized childcare for eligible, low income families. Private-pay childcare may be available if space allows. https://www.redwoods.edu/cdc
- Food Pantry / Resource Center -- https://www.redwoods.edu/resourcecenter
- Health Services for Students Free Flu Shots (while they last). Health care available at little or no cost at the Student Health Center during open hours. PE building 114. 476-4149. Closed Holidays and Breaks. https://www.redwoods.edu/studenthealth
- Multicultural and Diversity Center in LRC 103
- Parking information -- Permit is required. <u>https://www.redwoods.edu/publicsafety/Parking</u>
- Scholarships --
 - CR Scholarship office offers scholarships from dozens of courses -- all on just one application. https://www.redwoods.edu/financialaid/Scholarships
 - Outside Scholarships to apply for (a partial list) https://www.redwoods.edu/financialaid/Types-of-Aid/Scholarships/Scholarship-List
- Security/Public Safety -- Security Officer is on duty 24 hrs/day, 365 days/yr.
 - Can be reached from "Courtesy Phones" and call boxes located across campus.
 - Emergency Line: 476-4111 (Non-emergencies 476-4112) <u>https://www.redwoods.edu/publicsafety</u>

ADDITIONAL BENEFITS TO CR STUDENTS

- Art Gallery -- Admission is Free during open hours. <u>https://www.redwoods.edu/artgallery</u>
- Associated Students of College of the Redwoods (ASCR) ASCR is run by and for CR students. If you aren't involved already, you might like to check it out. See https://www.redwoods.edu/ascr/
- Bus Pass -- There will be bus passes in the Bookstore that CR Students can purchase at 50% off (31-day pass). EOPS will provide them for students in that program.

- Clubs There are many student clubs and organizations. Contact ASCR if you would like to start a new one! https://www.redwoods.edu/ascr/Orgs
- Housing Assistance 707-476-4195 <u>housing-liaison@redwoods.edu</u> <u>https://www.redwoods.edu/student-services/Home/StudentAssistance</u>
 - Facilities Available include 24-hour Restroom Access, Showers, Lockers, Laundry <u>https://www.redwoods.edu/student-services/Home/StudentAssistance</u>
- Humboldt Botanical Gardens -- Open Wed-Sun. The gate is kept closed to keep the deer out; during open hours, walk in and be sure to close the gate behind you. <u>http://www.hbgf.org/visit</u>
- Workshops such as Financial Literacy, Support Groups check CR Events list <u>https://www.redwoods.edu/events</u>

Check out the Student Services page for more: <u>https://www.redwoods.edu/services</u>