Syllabus for
MATH15: Intro to Stats – Eureka Campus

Semester & Year	Spring 2018	
Course ID and Section #	**MATH-15-E3415**	
Instructor's Name	Emily Chang	
Day/Time	8:45-10:00 TRF	
Location	SCSC208	
Number of Credits/Units	4	
Contact Information	*Office hours*	By appointment
	Email address	Emily-Chang@redwoods.edu Ekc140@humboldt.edu
Textbook Information	*Title & Edition*	Interactive Statistics, 3rd ed.
	Author	Aliaga & Gunderson
	ISBN	0-13-149756-1

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 probability techniques to make decisions via hypothesis testing and will estimate parameters using confidence intervals. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance, chi-square and t-tests; and application of technology for statistical analysis including the interpretation of the relevance of the statistical findings.

The course includes applications using data from disciplines including business, social sciences, psychology, life science, health science, and education.

Student Learning Outcomes

- Accurately communicate statistical ideas using correct statistical notation, graphs, and vocabulary.
- Use descriptive and inferential statistics to solve real-world problems.
- Demonstrate appropriate use of technology in making decisions based upon real-world data.
- Read and interpret information that contains statistical analysis and be able to communicate these results.
- 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 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: http://www.redwoods.edu/board/Board-Policies/Chapter-5-Student-Services, and scroll to AP 5500. 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: http://www.redwoods.edu/board/Board-Policies/Chapter-5-Student-Services and scroll to AP 5500.
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.

Mathematics Department Policy Regarding "Faculty Withdrawal" of Students after Census Day:

A student who is absent from class for the amount of time equal to two weeks of classes, will be withdrawn from the course, unless there are extenuating circumstances that are communicated to the instructor in a timely manner. This "faculty withdrawal" can occur between Week 4 and Week 10 of the semester.

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://www.redwoods.edu/District/Board/New/Chapter5/Ap5500.pdf

MATH15 - Intro to Statistics
Section: E3415
TRF 8:45-10:00 SCSC 208

Emily Chang
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ekc140@humboldt.edu
Math Lab hours: W 10-12, 1-4, F 1-3
Office Hours: T F, 10-11

Prerequisites: MATH120, MATH194 or MATH102. You are expected to comfortable with function notation, linear functions, solving/graphing/interpreting linear equations, set and inequality notation, square roots and percentages. You are also expected to be able to read, think and write critically.

1 Required materials:

1. *Interactive Statistics, Third Edition* by Martha Aliaga and Brenda Gunderson
2. Notebook

To be successful in the class, you will need to read the textbook. We will pull examples from the textbook and you will be assigned readings from the textbook.

This notebook is NOT for in-class notes. You will use your notebook to curate your favorite equations and definitions. You can write as little or as much as you want in it, whatever will help you. However, I will collect your notebook after each quiz and grade it on effort. The best thing about your notebook is that you can it as a reference guide during quizzes :D

Optional materials:

1. Calculator
2. R Statistics

You do not *need* a calculator since you can look up values on a table. However, a calculator will be a GREAT convenience and HIGHLY recommended since you cannot use your phone's calculator on exams. I recommend a TI-83 or TI-84 calculator. There are many other calculators out there but you will have to work out the functions yourself.

If you like programming, you can downland the FREE desktop software called R Statistics.
`https://cran.cnr.berkeley.edu/`

2 Homework

You will have homework problems out of the textbook. Homework will be neat and labelled with pertinent information. I may award beauty/effort points if your homework is *statistically significantly* impressive. Feel free to work with others but you must submit your own work!!!

3 Projects

Finally a math class with real-world applications! We will have several projects throughout the semester. Some projects will be individual and some will be group projects. Some projects will require write ups, some will require presentations.

4 Evaluations

Quizzes

We will have a quiz after most chapters. You may use your reference book.

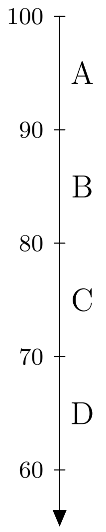
There will be no make ups. However, if you have extenuating circumstances, you must *email me* at least two class periods before the date. I will reschedule you to take the quiz *before* quiz day. If you are sick and miss the quiz, you must email me before or on day of the quiz before class. If you do not email me, I will not allow you a second chance! You must make up the quiz before I return the quizzes to the class.

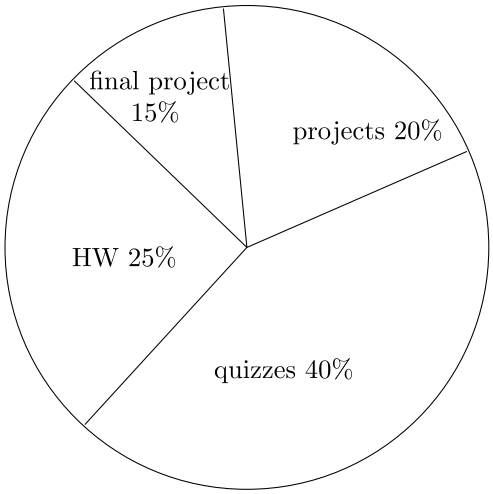
Quiz 1	Jan 30
Quiz 2	Feb 8
Quiz 3	Feb 13
Quiz 4	Feb 23
Quiz 5	Mar 6
Quiz 6	Mar 29
Quiz 7	Apr 19
Final Project	last week of classes+finals week

Final Project

Instead of a final exam, we will have a final project that will be a culmination of the statistics tools we have learned this semester. You will come up with your own theory to test, design your own experiment, collect data, analyze data then present your findings with a presentation.

Grading





∗If you have stellar attendance, I will bump you up have a grade.

5 Classroom Expectations

Communication

It is your responsibility as a student (and an adult) to communicate to me when problems arise. If you have concerns or scheduling conflicts, you *must* remind me via **written communication**. If you schedule to take a quiz at a different, you must confirm the appointment the night before via email.

Etiquette

You are expected to arrive on time and to leave when the class is dismissed. If you do not want to stay for the entire class, do not come at all. If you have questions that are unrelated to the concepts in class (i.e. questions about your grade), ask before class begins or after class ends.

You are here to learn. When you are in class, I expect you to be awake and to pay attention. Please do not chat with your neighbor or play with your communication device.

No cell phones, computers or iPads during class.

Lastly, you are expected to treat fellow students with respect.

Participation/Attendance

Attendance is mandatory if you want to pass.
If you participate, you will be rewarded with extra points and knowledge.

Syllabus is subject to change!

Tentative course outline

Tuesday	Thursday	Friday
Jan 16 **1** Syllabus 1.1 Introduction to scientific method 1.2 Decisions 1.3 Language of decision making	Jan 18 **2** 1.3.3 Type I, Type II errors	Jan 19 **3** 1.3.3 Type I, Type II errors 4.2 Variables project #1: collect and graph data
Jan 23 **4** 1.4.1 Forming a decision rule 1.4.2 Direction of extreme, rejection region :(	Jan 25 **5** 1.4.3 Unusual data? *p*-value!	Jan 26 **6** con't 1.4.3 Unusual data? *p*-value! 5.2 Measuring center: mean, median, mode
Jan 30 **7** 5.3.3 Standard deviation	Feb 1 **8** Review chapter 1, 4 quiz #1: 1, 4, 5 project #1: due	Feb 2 **9** 2.1-2.3 Intro to sampling 2.4 Good data?
Feb 6 **10** 2.5 Random sampling 3.1-3.3 Three different variables 3.4, 3.5 Observational v experimental study	Feb 8 **11** Review chapter 2, 3	Feb 9 **12** quiz #2: chapter 2, 3 6.1, 6.2 Introduction to models
Feb 13 **13** 6.3 Standard normal distribution 6.4 Other distributions	Feb 15 **14** Review chapter 6 quiz #3: chapter 6 7.1, 7.2 Probability	Feb 16 no class
Feb 20 **15** 7.3 Simulations	Feb 22 **16** 7.4 Probability and Laws of Probability	Feb 23 **17** 7.5 Random variables
Feb 27 **18** 8.1 Sampling distribution of statistic 8.2 Sampling distribution of statistic (proportion) class activity	Mar 1 **19** 8.3 Bias and variability	Mar 2 **20** 8.4 Sampling distribution of statistic (mean) class activity

Tuesday	Thursday	Friday
Mar 6 **21** Review chapter 7, 8	Mar 8 **22** quiz #4: chapter 7, 8	Mar 9 **23** 9.1-9.3 Hypothesis testing: pop proportion
Mar 13 Spring break no class	Mar 15	Mar 16
Mar 20 **24** 9.3 con’t 9.4 Confidence interval: pop proportion	Mar 22 **25** 10.1, 10.2 Hypothesis testing: pop mean	Mar 23 **26** 10.2 t-tes
Mar 27 **27** 10.4 Confidence interval: pop mean review chapters 9,10	Mar 29 **28** quiz #6: chapters 9,10	Mar 30 **29** 11.1, 11.2 Comparing two treatments 11.3 Paired sample
Apr 3 **30** 11.4 Independent sample	Apr 5 **31** 12.1-12.4 Comparing many treatments...the F-distribution	Apr 6 **32** 13.1, 13.2 Graphing data (scatter plot) project #4: “Lines”
Apr 10 **33** graphing lines review 13.3 Modeling linear relationships	Apr 12 **34** 13.4 Residual analysis	Apr 13 **35** 13.6 Statistical significance 13.7 How strong is relationship?
Apr 17 **36** review chapter 13 quiz #7: chapter 13 project #4: help?	Apr 19 **37** 14.1, 14.2 χ^2 statistic	Apr 20 **38** 14.3 Goodness of fit

Tuesday	Thursday	Friday
Apr 24 **39** 14.4 Test of homogeneity	Apr 26 **40** 14.5 Test of independence!	Apr 27 **41** review: chapter 14
May 1 **42** **Final project** presentations	May 3 **43** **Final project** presentations	May 4 **44**
May 8 **45** **Final project** presentations	May 10	May 11

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Last night, I slept ________________ hours.

I went to sleep at ________________.

I live ________________ minutes away from campus.

I prefer to be evaluated with (projects / homework)

I am excited for this class! (agree / disagree)