

Fall 2018 Course Syllabus

Math 103 — Elementary Statistics

Professor Tim Busken

Contact Info: tbusken@miracosta.edu

I usually respond within 24 to 48 hours

Section #2551, 4 units

The class meets on Mon. &

Wed. at the San Elijo Campus

in Rm 304 from 1:30 - 3:20 pm,

Final Exam Date: Wednesday, December 12th, 1:30 - 3:20 pm
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Course Description: This course introduces data analysis. Topics include data collection, descriptive statistics, probability, sampling, estimation, significance testing, and correlation and regression. Students use appropriate technology to analyze real-world data.

Course Objectives: At the end of this course you should be able to

1. Design a simple statistical experiment
2. Give an appropriate descriptive summary, including the shape, center, spread, and outliers of the distribution, from a set of raw data
3. Analyze the relationship between two variables using the scatterplot, correlation coefficient, and least-squares regression line
4. Use the normal distribution to find approximate solutions to problems about sample means and sample proportions
5. Compute and interpret confidence intervals for population means and proportions for one- and two-sample problems
6. Formulate and carry out significance tests of population means and proportions for one- and two-sample problems
7. Use the Chi-square test to analyze goodness-of-fit, contingency tables and ANOVA
8. Analyze real-world data using appropriate technology

Student Learning Outcomes:

1. Give an appropriate descriptive summary, including the shape, center, spread and outliers of the distribution, from a set of raw data.
2. Analyze the relationship between two variables using the scatterplot, correlation coefficient, and the least squares regression line.
3. Student will be able to use the normal distribution to find approximate solutions to problems about sample means and sample proportions.

2 Required Materials:

1. the textbook (physical or digital copy)
2. statcrunch spreadsheet software \$13
How to get it: statcrunch.com/get-access/

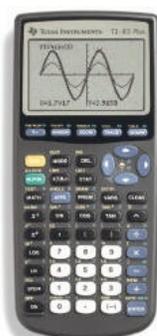
3 Course Websites:

1. MiraCosta's Canvas (online gradebook, calendar and test keys):
miracosta.edu/instruction/distancededucation/index.html
2. My Website (Lab info, practice tests and additional student resources):
timbusken.com/statistics.html
3. Statcrunch Website (spreadsheet software): statcrunch.com

Textbook: Elementary Statistics 6e, Larson and Farber
ISBN: 9780321911216 , Publisher: Pearson.
This course covers Chapters 1 – 10



You will need a physical or digital copy of the textbook for homework and reading assignments. You will NOT need a textbook that has a cd or matlab access code/card.



TI-83 plus



TI-84 plus

Calculator: Required calculator will be provided at no cost for the classroom use. The calculators are also available for free on-campus use at the Math Learning Centers at all college sites. However, if you are going to purchase or rent a calculator for this course, the Math department recommends the Texas Instruments TI-83 plus or TI-84 plus.

Free Online Calculator: You may want to use this free online TI-83+ calculator outside of the classroom. <https://sites.google.com/site/ti83interactivecalculator> (only works on Windows)

<u>Grading:</u>	Labs	20% (roughly 10 labs)
	Test 1	20% (Chapters 1, 2, 3)
	Test 2	20% (Chapters 4, 5 and 9)
	Test 3	20% (Chapters 6 and 7)
	Final Exam	20% (Chapters 8 and 10)

Numerical course grades are rounded to the nearest whole percentage and translate to a letter grade.
A= 90%-100% B=80%-89% C=70%-79% D=60%-69% F=0%-64%

Online Gradebook: The online gradebook is available when you login to MiraCosta's 'Canvas'

Course Calendar: The course calendar is on the 'Canvas' website. Lab due dates and scheduled test dates can be found on the calendar. These due dates and test dates are tentative and could change.

Labs are worth 20% of your overall grade. There will be roughly 10 or so labs. The main purpose of these labs is to teach you the procedures for using both statistical and spreadsheet software and the TI83/84 calculator for performing computations and obtaining graphs and tables. Labs are due at the beginning of class on the due date. Late labs will likely not be accepted. *I will drop your lowest lab score.*

Homework: The list of homework problems is given at the end of this document and on my website. I will not collect your homework but you need to do the assigned problems after every class to help you prepare for tests and keep up with new concepts. You will be completing the homework on paper from out of the textbook. I recommend doing this in the tutoring center so that you can get immediate help if you need it. I assigned mostly odd-numbered problems so that you can check your answers in the back of the book, which you should do. If your answers are not matching up with those given in the back of the book, we need to find out why. When this happens, get help from the tutoring center, a classmate, or ask me for assistance.

Tests: There will be 3 tests worth 20% each and a final exam worth 20%. You must take the test on the day of scheduled test. If for any reason, you must miss class on the day of a quiz or exam, you must make arrangements with me *in advance* for taking the test at some other time. It is your responsibility to make the necessary arrangements. Practice tests are located on my website (timbusken.com/statistics.html): click on 'SITEMAP' then click on 'PRACTICE TESTS.'

Formula Sheet for Tests: You are allowed to make and use a formula sheet for each test. This formula sheet may only occupy one side of one sheet of a regular size (8.5 in by 11 in.) piece of paper. Worked example problems are not allowed! Only formulas, definitions and procedural comments (a list of steps required to carry out a multi-step process or calculation) are allowed. If you have a question about what is allowed on the formula sheet, please ask me before the test. During the time you spend working on homework and practice tests, please be thinking about what you will need to have on that sheet and write it down. I would encourage you to not wait until the last minute to make your formula sheet.

Extra Credit: The extra credit percent you earn is added to your lowest test score at the end of the semester (but not the final exam). There are two labs that are extra credit. You can find links to the labs on my website (timbusken.com/statistics.html) by clicking on SITEMAP button then clicking 'Labs.' Each lab is worth up to 5% of a test score. For example, if you do one lab and get a 100%, I add 5% to your lowest test score. If you do two labs and get a 100% on both labs, I add 10% to your lowest test score. ***The extra credit labs are due on the day of the final,*** but you should ask me questions about the labs before the final. I will not grade the extra credit until after I have graded finals. Don't wait until the last minute to start the extra credit labs, because you'll

need that time to prepare for the final exam, or for getting much needed rest.

Accommodation of Disability: If you have a hidden or visible disability, which may require classroom or test accommodations, please see me as soon as possible during a scheduled office hour. If you have not already done so, please register with Disabled Students Programs & Services (DSPS) at 760.795.6658. Their office is located on the Oceanside campus in Building 3000, adjacent to parking lot 3C.

Add/Drop Dates:

- Sept. 2 (Sun), 2018 - Last day to add full-term classes with instructor permission
- Sept. 21 (Fri), 2018 - 30% Pass/No Pass (P/NP) deadline for full-term classes
- Nov. 16 (Fri), 2018 - 75% Withdrawal (W) deadline for full-term classes

Holiday Closures:

1. Mon., Sept 3rd, 2018 - Campus Closed - Labor Day
2. Mon., Nov. 12th, 2018 - Campus Closed - Veteran's Day
3. Nov. 22–24 - Campus Closed - Thanksgiving

Attendance Policy: This is a class that meets face to face. Attendance is mandatory. It is your responsibility to *initial the sign in sheet* at every class meeting. You may be dropped for any absence without notifying me by email during the first week. Please avoid being habitually late or leaving early. Late arrival or early departure from class can be counted as an absence. If you know that you will be absent or very late, please notify me by email me. In the event of an absence, you are responsible for all material covered in class, turning all assignments in on time and any schedule changes or class announcements. I consider five or more absences as an excessive number of absences. Since attendance is mandatory, you might be dropped after the fifth absence (two and a half weeks of class). Re-enrollment (which may occur once) is possible, but you must discuss it with me first. Again, attendance is your responsibility as are its consequences. I drop students who don't attend.

Cheating Policy:

Violations of the academic dishonesty policy will be treated quickly and harshly. A student found in violation may receive a failing grade on that assignment or test, and will have this infraction reported to the college. I do not tolerate academic dishonesty in any form. MiraCosta College requires reporting of ALL instances of academic dishonesty as Academic Integrity Violations. These include:

- looking at another persons exam during a testing situation
- copying another students lab and submitting it as your own
- bringing in and using notes or supplemental materials that are allowed

- allowing another student to copy your work and submit it you will be punished exactly the same as the person who did the copying. To avoid this, don't give your work to someone else. Working together means sharing ideas and discussing concepts, and is acceptable; each student must independently write their own solutions and responses.

Academic Integrity: Students are expected to conduct themselves in accordance with Mira-Costa's *Standards of Student Conduct* (Board Policy 5500). Disruptive behavior, threats, harassment, willful disobedience, cheating, plagiarism, or other forms of academic dishonesty are not acceptable and will not be tolerated. Students are expected to conduct themselves in an ethical manner that promotes a safe and harmonious learning environment while on the campus. Charges of misconduct and disciplinary sanctions may be imposed upon those who violate these standards of conduct, or provisions of college regulations. When a violation of the *Standards of Student Conduct* occurs, Board Policy 5520: *Student Discipline Procedures* will be followed.

- ***Standards of Student Conduct***

<http://miracosta.edu/officeofthepresident/board/downloads/5500AP-StandardsofStudentConduct.pdf>

- ***Student Discipline Procedures***

<http://miracosta.edu/officeofthepresident/board/downloads/5520AP-StudentDisciplineProcedures>

-Effective5-5-09Amended9-20-11-1-24-12-RefUpdate4-15.pdf

Cell Phone Use Policy: Please turn your phone off or on vibrate mode during class. If I see that you are too distracted by your cell phone, or that your cell phone use is distracting the learning environment, I will kindly ask you to stop. If you can't respect that, I will dismiss you from the class meeting in which the violation occurred and file an incident report with the associate dean of student services.

Grade/Repeating Course Issue: The state has decided to limit students with more than 3 grades of D, F, NP, or W. Grades prior to summer 2012 will be included in the count. You need to be extremely careful with these and make the big decision about dropping the course very early (see the drop deadline). If not, and you get a third non-passing grade, you may not be able to register for the course again.

Drop Policy: If you decide to drop the course, use SURF to drop yourself. Don't wait for me to drop you automatically. If I drop you and you want to be reinstated, see me quickly.

OUTLINE OF COURSE CONTENT

The course will address the following topics:

I. Data collection

- A. Observational studies
- B. Controlled experiments.

II. Descriptive statistics

- A. Exploratory data analysis
- B. Shape of a distribution-frequency tables and graphs
- C. Center of a distribution
- D. Spread of a distribution
- E. Outliers
- F. Empirical rule, standard scores, and percentiles.

III. Probability

- A. Language of probability
- B. Probability distributions and random variables
- C. Binomial distribution
- D. Normal distribution.

IV. Sampling

- A. Types of sampling
- B. Simulation of random samples
- C. Distributions of sample mean and sample proportion
- D. Central limit theorem.

V. Estimation

- A. Confidence intervals for single population proportion
- B. Confidence intervals for single population mean.

VI. Significance testing

- A. Tests of single population proportion
- B. Tests of single population mean.

VII. Inferences for two populations

- A. Comparing two population proportions
- B. Comparing two population means
 - 1. Paired samples
 - 2. Independent samples.

VIII. Correlation and regression

- A. Scatterplots
- B. Correlation
- C. Linear regression.

IX. Non-parametric methods

- A. Chi-square goodness-of-fit test
- B. Analysis of two-way contingency tables
- C. Analysis of Variance

X. Technology use for real-world data analysis

- A. Data collection
- B. Data analysis
- C. Statistical inference.

Math Learning Center: The MLC is open to all math students at MiraCosta. Services include drop-in tutoring, computerized tutorials, and homework help. Calculators, textbooks, and headphones are available for use in the

MLC. <http://www.miracosta.edu/instruction/mathematics/mlc/index.html>

Oceanside: BLDG. 1200
Phone number: (760)757-2121 x 6381

M – TH: 8:00 am – 9:00 pm

Friday: 8:00 am – 3:00 pm

Saturday: 10:00 am-5:00 pm

Sunday: Closed

San Elijo: BLDG. 100 Phone
number: (760)757-2121 x
7781

M – TH: 9:00 am – 8:00 pm

Friday: 9:00 am – 3:00 pm

Saturday/Sunday: Closed

Community Learning

Center: Room 136 Phone
number: (760)757-2121 x
8843

M – F: 8 am – 1 pm

Saturday/Sunday: Closed

Tutoring Services: The MiraCosta College tutoring program provides academic assistance free of charge if you are enrolled in either day or evening credit classes. Tutors are available by appointment for individual (one-to-one) help and on a drop-in basis (visit the tutoring center to view the current drop-in schedule). Appointment sessions usually last 50 minutes and are arranged for the student and tutor at a mutually convenient time. Additional sessions may be requested as needed.

<http://www.miracosta.edu/student services/tutoring/index.html>

Their phone numbers are:

Oceanside: 760.795.6682

San Elijo: 760.944.4449 x7748

Nordson STEM Center:

The STEM Center is located on the Oceanside campus and supports all students in STEM courses. The STEM Center offers free Drop-In Tutoring for many courses in biology, biotechnology, chemistry, physics, and physical science. The STEM Center also hosts Drop-In Counseling hours, group study rooms (reserve online), laptops, molecular models, and many textbooks for STEM Center usage. Many STEM Workshops are offered to help students succeed in their STEM courses and explore career/job opportunities in STEM related fields.

Location: OC 1200.

Phone number: 760.757.2121, x6388

<http://www.miracosta.edu/student services/stem/index.html>

Disabled Students: If you have a disability, you are encouraged to contact Disabled Students Programs & Services at 795-6658. Their office is located in Building 3000, adjacent to Parking lot 3C. They will help you determine what assistance is available for you. Any student requiring special assistance due to a disability must discuss what is needed with me by the second week of semester. <http://www.miracosta.edu/student services/dsps/index.html>

LGBTQIA Safe Space Program: MiraCosta College has an expressed commitment to equity and inclusion for students, faculty, and staff members who are lesbian, gay, bisexual, transgender, queer, questioning, intersex, and asexual. The district employs a Campus Liaison for LGBTQIA+ Needs, offers [LGBTQIA Safe Space](#) training, and has multiple student scholarships for members and active allies of the LGBTQIA+ community. For information about

these and additional campus resources and services visit miracosta.edu/lgbt or contact the campus liaison for LGBTQI needs at 760-795-6460.

Veteran Services: The Veterans Education Office, located in Building 3300, provides assistance to veterans and dependents wishing to use their educational benefits at MiraCosta College. The Veterans Information Center, located in Building T-100, provides a place for students to find resources on VA educational benefits, MiraCosta Student Services, and community organizations that are dedicated to assisting veterans. The center also provides a place for students to relax, study, and meet with friends. The Veteran Peer Advisors are also available. Resources are available on a variety of issues, including employment, counseling, housing, and healthcare.

Oceanside Campus <http://www.miracosta.edu/studentservices/veteransservices/index.html>
3300 Building: P 760.757.2121 x6285
T100 Building: P 760.757.2121 x6981

Counselling Services: The Counseling Center offers individualized academic, career, and personal counseling to assist both prospective and current students in developing their educational programs, coordinating their career and academic goals, and understanding graduation, major, certificate, and transfer requirements. Students can use online resources (<http://www.miracosta.cc.ca.us/studentservices/counseling/index.html>) for general questions and visit or call the office for appointments and drop-in times:

Oceanside Campus

Building 3700 (Parking lot 3C)
Phone: 760-795-6670
Fax: 760-795-6663

San Elijo Campus

Administration Building
Phone: 760-634-7811
Fax: 760-634-7875

Wonderful, Free, Available Resources: There are many free resources available for you on campus to assist you with your education:

- [Food pantry](#)
- [Health Services](#)
- [Textbook loan program](#)

Wonderful, Supportive Clubs and/or Organizations: Joining a [club](#) or organization is a fun and instrumental part of your college education. Here are some of the clubs and organizations to check out:

- [Puente](#)
- [Umoja](#)
- [RAFFY](#) (Former Foster Youth)
- and many more

Homework List

Book Section	Problem List
Section 1.1	10, 11 -- 43 ODD
Section 1.2	7, 9, 11, 13, 14
Section 1.3	11, 13, 23, 25, 26, 27, 28, 29
Section 2.1	15, 17, 31, 34, 35, 38, 39, 41, 43
Section 2.2	9, 11, 17, 18, 21, 23, 24, 25, 28, 30, 32
Section 2.3	9, 11, 15, 18, 20, 24, 35, 41, 43, 49, 51
Section 2.4	13, 15, 17, 19, 29, 31, 35, 36, 39, 43, 45
Section 2.5	15, 16, 17, 19, 21, 23, 31, 33, 35, 37, 48, 49, 51
Section 3.1	1, 2, 15, 17, 19, 21, 24, 25, 27, 37, 39, 41, 43, 45, 47, 49
Section 3.2	7, 8 AND 19 -- 27 ODD
Section 3.3	9 -- 23 ODD
Section 3.4	7, 9 AND 15 -- 31 ODD
Section 4.1	1, 2, 3, 9, 11, 13, 15, 19, 21, 23, 27, 29, 31, 33
Section 4.2	3, 4, 6, 7, 9, 11, 13, 14, 15, 19, 20, 22, 23, 27, 29
Section 5.1	5, 11, 13, 15, 18, 25, 27, 31, 37, 39, 41, 43, 45
Section 5.2	1-19 ODD
Section 5.3	1, 5, 9, 13, 17, 21, 23, 27, 31, 33, 35, 37
Section 5.4	15-37 ODD
Section 6.1	5, 7, 13, 21, 25, 29, 35, 37, 47, 49
Section 6.2	1, 3, 5, 7, 9, 17, 19, 25, 27
Section 6.3	1-17 ODD
Section 7.1	11, 13, 15, 21, 23, 25, 27, 31, 33, 35
Section 7.2	31 -- 36 ALL, pvalue method only
Section 7.3	23 -- 28 ALL
Section 7.4	9 -- 14 ALL, parts a, c, d, e
Section 9.1	1, 2, 3, 9--14 ALL, 21, 23
Section 9.2	1, 3, 13 -- 21 ALL
Section 10.1	1 -- 15 ODD
Section 10.2	13 -- 21 ODD (pvalue method only)
Section 10.4	5-8 ALL (pvalue method only)