

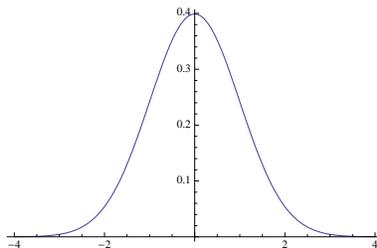
Math 4 Introduction to Probability and Statistics

Instructor: Michael Nathanson **Office:** Galileo 103-A
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Office Hours: MF 1:00–2:00, W 10:20–11:20, Th. 10:30–11:30,
and by appointment (Office hours tentative—to be confirmed)

Text: Triola, *Elementary Statistics*, 11th Edition.

Prerequisite: Students must have passed the SMC placement exam or gotten approval from the Director of Mathematics Placement

Course Content: This course covers the basics of probability and statistics with an eye towards applications in a variety of fields. It performs a dual role, providing specific mathematical tools which can be applied in a student's major field even as it is imbued with the spirit of mathematics as part of the liberal arts tradition. An outline of the main topics is included on the last page of this handout.



Student Disability Services: Student Disability Services extends reasonable and appropriate accommodations that take into account the context of the course and its essential elements for individuals with qualifying disabilities. Students with disabilities are encouraged to contact the Student Disability Services Office at (925) 631-4358 to set up a confidential appointment to discuss accommodation, policies, guidelines and available services. Additional information regarding the services available may be found at the following address on the Saint Mary's website:

<http://www.stmarys-ca.edu/academics/academic-advising-and-achievement/student-disability-services.html>

I am committed to helping every student achieve at the highest possible level in this class, and I will strive to respect your individual concerns, needs, and challenges in a way that is fair to the rest of the class.

Grading: Your final grade will be calculated using...

Three midterm exams and one final exam: 70%

Homework: 10%

Class Participation, Quizzes, and In-Class Work: 10%

Final Project 10%

Exams: There will be three midterm exam and a **cumulative** two-hour final exam on Monday, December 12, at 2:00 PM. Please do not make any plans which will interfere with your ability to take this exam.

The final exam counts as much as two midterm exams; and you may drop your lowest midterm exam score.

Homework: The only way to learn math is to do it, and the homework is your best chance. Invest the time to do a good job. Homework is a structured way for you to interact with the material outside of class. I strongly encourage you to work together on the homework. It is more fun, and you can help each other out. You also can learn a lot by trying to explain a problem to someone else.

You will have homework due for almost every class meeting. You will receive a simple check/plus/minus grade on this work, indicating both that you have engaged and attempted every question and gotten most questions correct. It is not expected that you will get every question right on the homework, but it *is* expected that you will work at each questions and write down your thoughts on them.

Attendance: I expect everyone to be in class on time every day. If you absolutely have to miss a class due to emergency or illness, please send me an e-mail, preferably in advance. This is just common courtesy.

Class Participation: Each student is expected to be mentally and verbally active in this class and to answer his/her fair share of questions. This is your class—be a part of it! Your participation grade will be based on my observations of the extent of your preparation, mental involvement, verbal involvement, and willingness to support the work of the class as a whole.

This grade will also include any written work done in class and any work done with i-Clickers. It will also include any quiz grades.

Food & Drink: You may bring drinks into class if you can consume them silently and without spilling. Please do not eat during class.

Cell phones: During class, I should not be aware that you own a cell phone, pager, blackberry, etc. Do your best to keep all of your focus inside our classroom. This helps create an environment for focused work.

Academic Honesty: The rules set forth in the honor code and student handbook apply to all aspects of this course. In general, any work submitted for credit must come directly from your own understanding, thoughts, and ideas. Presenting the work of others as your own is strictly prohibited. During tests and quizzes, it is your job to avoid even the appearance of impropriety. In the case of homework you may collaborate with others in discussing how a problem may be solved, but any final submitted solutions should be your work alone.

Honesty and Respect: I will strive to be honest and straightforward with you every day, and I expect no less in return. People who make excuses and play games with the truth are not welcome in this class. If you show self-respect and a willingness to work, I will do all that I can to help you succeed. If you disrespect the educational process, I will be less eager to help you.

Email and Gaellearn: Each of you has a St. Marys email account with which I communicate with you. Information and assignments on the class Gaellearn site—you need to check this regularly.

StatDisk: You will find a CD (called Triola ES11) with the textbook that you purchase. This CD contains data sets and a program called Statdisk which allows you to do such things as create histograms and scatterplots, and means and standard deviations, and regression equations, etc.

Calculators: Calculators will sometimes be helpful; sometimes, not so much. In fact, learning when it's good to use a calculator and when it's not is an important skill. Be flexible, and don't be afraid to practice doing problems by hand. Students will be expected to have access to a calculator for basic arithmetic on some exams. It is not expected that you have a graphing calculator, though the Statdisk CD does contain some programs for the TI 83/84.

Topic Outline: The primary focus of this course will be on

- Introduction to statistics: Understanding how to collect, summarize, and present data
- Correlation and Regression: Understanding how certain data are related and building mathematical models to capture this relation
- Introduction to probability: Understanding how to predict the likelihood of events given some set of information
- The Central Limit Theorem: Using statistics to understand the nature of repeated experiments
- Estimation and Hypothesis Testing: Using statistics to make decisions

Learning Outcomes: At the end of this course, students will be able to:

- **Evaluate** the methods and conclusions of statistical studies
- **Calculate** basic statistics of data sets and **interpret** their meaning. These will include mean, median, and standard deviation.
- **Design** experiments in which data is collected, analyzed, and presented; and **justify** mathematical conclusions and **communicate** their implications in oral, written, and graphical form.
- **Understand** the big ideas of probability, including independence, and be able to perform basic calculations.
- **Construct** confidence intervals and **use** test statistics to estimate parameters and test hypotheses.
- **Use technology** in an appropriate fashion to perform calculations and answer questions.

HELP! Office Hours:

Please stop by to discuss any questions you might have. If you cannot make it to office hours, arrange a separate time to meet with me. If you get to my office and I am not there, please don't leave; I'll be there presently. If you make an appointment to see me and then can't make it, call to tell me you won't be there.

HELP! Student Math Center:

Sunday through Thursday nights, 7 to 9, in Galileo 110. A great place to work!

HELP! Tutoring at TASC:

Sometimes there is group tutoring at a fixed time. You can also schedule some one-on-one tutoring. Please go to the Tutoring and Academic Skills Center in Filippi Academic Hall.

Things you should know about my teaching:

- I'm a pretty nice guy and I really, really want you to succeed.
- Your grade will be based on your understanding of the material; **if you can't get the right answer in calculations, you won't get a good grade**, even though I'm a nice guy.
- I take the process of learning very seriously.
- Office Hours are very helpful.
- My best courses happen when students are questioning, active and collaborative.