

PREAMBLE

I must tell you before hand what kind of teacher I am and what kind of class you are getting into.

I don't believe in teaching statistics as a bunch of cook book recipes. I like to show the students the "why" behind the recipes: for if you understand the "why" you will remember the recipes for ever after.

Yet this is not well received by students who take this class just to fill a requirement, get a passing grade and go on to the next required course. In particular my efforts at giving proofs is not appreciated at all by more than 40% of students (see my evaluations).

Instructor	Self CAPE	Term	Enrollment	Questionnaires Returned	Recommend Class	Recommend Instructor	Study Hours/Week	Learned
Gatzouras, Dimitrios	no	SP08	56	34	76%	88%	5.77	3.88
Gatzouras, Dimitrios	no	WI08	37	28	75%	89%	5.50	3.36
Terras, Audrey	no	FA07	44	11	27%	82%	5.41	3.09
Leskow, Jacek	no	SP07	51	26	85%	100%	4.50	3.62
Garsia, Adriano M.	no	WI07	42	25	73%	58%	4.17	3.54
Davydov, Youri	no	FA06	23	14	54%	38%	5.64	3.29
Arias-Castro, Ery	no	SP06	65	40	76%	59%	6.00	3.42
Politis, Dimitris	no	WI06	56	23	86%	82%	4.50	3.57
Delaigle, Aureore	no	FA05	84	37	85%	100%	5.58	4.05
Gatzouras, Dimitrios	no	SP05	87	51	90%	98%	4.58	3.67
Kim, Chul	no	WI05	55	25	42%	29%	5.70	2.79
Delaigle, Aureore	no	FA04	98	46	78%	85%	4.23	3.52
Haff, Leonard R.	no	SP04	168	88	90%	97%	2.70	3.57

Since the Mathematical background of undergraduates at your level is not sufficient for a mathematical treatment of the subject my "proofs" are experimental verifications of the validity of statistical tests based on Montecarlo simulation. I do this to an extent that is unique in the US.

So if your have a respectable IQ and you like to think, I promise you that you will have a unique experience with this course.

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183 SYLLABUS

Text Book:

“An Introduction to Mathematical Statistics and Its Applications”, Fourth Edition, 2006, by Richard J. Larsen and Morris L. Marx (Prentice Hall).

Recommended: *“The Cartoon Guide to statistics”* by Larry Gonick and Woollcott Smith

Course Outline

- (1) Introduction to probability.
- (2) Discrete and continuous random variables
- (3) Binomial, Hypergeometric, Poisson and Gaussian distributions.
- (4) Central limit theorem.
- (5) Confidence intervals,
- (6) Hypothesis testing,
- (7) Chi square tests
- (8) Goodness of fit, Contingency tables
- (9) Regression
- (10) Analysis of Variance

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KEEP IN MIND

We will mainly cover selected portions of chapters 2-7 and isolated topics from chapters 10,11,12 and 14. We will also cover some material not contained in this book, particularly the development of probability theory based on Montecarlo simulation. For this latter material students should be able to manage by taking notes in class and carefully studying the handouts posted in the class website.

Take notice : The posted handouts contain results and formulas which are needed in quizzes and in the final exam. Since all our tests are **open book**, failure to download and acquire familiarity with the contents of the posted handouts may result in poor performance in the class.

Take notice: Attendance to this course is required. Students who, for exceptional reasons, need to leave during lecture time should make this known to the instructor at the beginning of the lecture. Surprise short quizzes may occur for the benefit of the students present in the classroom

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COURSE WORK

Students at this stage of their development should be able to read and understand the more descriptive parts of the textbook without the help of the instructor. Periodically there will be some reading assignments. Your comprehension of the assigned material will be tested.

Lecture time will be dedicated to the course material with mathematical content.

Monday and Wednesday will be regular lecture times.

On most fridays we will have an in class quiz,

which will cover the material presented up to and including the monday of that week.

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EXAMS

We will have 6 or 7 classroom quizzes.

Go to sections for more precise information concerning what is expected from you on the next quiz.

Our first quiz will be on Friday April 17. There will not be a quiz the last week of classes.

To get a realistic hands on experience with statistics we will have some lab sessions.

On some Fridays the quiz will be part of a lab session.

The lowest quiz score will be automatically dropped.

If you have to miss a quiz this will count as your lowest score.

No make-up quizzes will be given.

The final exam will count as 2 quizzes.

The final is cumulative and its score cannot be dropped.

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COMPUTER SIMULATION

Statistical procedures will be often demonstrated using MATHEMATICA. Thus a brief introduction to programming in MATHEMATICA will be part of the instruction. You can have access to MATHEMATICA at the computer labs in the basement of the AP&M building. MATHEMATICA procedures that will enable you to experiment with the course material will be made available in the course website.

The course website has also a number of Applets specially put together to illustrate our course material, you will be instructed how to use them at lecture time.

The course website may be reached via the “183” link at
<http://math.ucsd.edu/~garsia>

Our TA is Angela Hicks. All questions regarding handouts, quizzes and scheduling of exams should be addressed directly to the TA.

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