Department of Mathematics
Pomona College

Math 151. Probability Spring 2012

Course Outline

Time and Place: MWF 900 am - 950 am Millikan 134

Instructor: Dr. Adolfo J. Rumbos

Office: Andrew 259

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Office Hours: MWF 11:00 am – 11:50 am; TR 9:00 am – 10:00 am; or by appointment

Text: *Probability and Statistics,*
by Morris H. DeGroot and Mark J. Schervish, Adison Wesley

Prerequisites: Multivariable Calculus or Vector Calculus, and Linear Algebra.

Course Description. This course is an introduction to the theory and applications of Probability; special attention will be given to applications relevant to statistical inference. A solid knowledge of multivariable calculus and linear algebra will be presupposed. The course topics are listed in the attached tentative schedule of lectures and examinations.

Assigned Readings and Problems. Readings and problem sets will be assigned at every lecture and collected on al alternate basis. Students are strongly encouraged to work on every assigned problem. **Late homework assignments will not be graded**.

Grading Policy. Grades will be based on the homework, three 50-minute examinations, plus a comprehensive final examination. The overall score will be computed as follows:

homework	20%	
three 50-minute exams		50%
final examination	30%	

Final Examination.

Time: Thursday, May 10 9:00 am - 11:00 am.
Place: Millikan 213

Math 151. Probability **Spring 2012**

Tentative Schedule of Lectures and Examinations

Date			Topic
W	Jan	18	Introduction: A problem from statistical inference
F	Jan	20	Sample Spaces
M	Jan	23	σ-fields
W	Jan	25	Probability function
F	Jan	27	Probability function (continued)
M	Jan	30	Independent events
W	Feb	1	Conditional probability
F	Feb	3	Continuous and discrete random variables
M	Feb	6	Cumulative distribution function (cdf)
W	Feb	8	Probability density function (pdf)
F	Feb	10	Probability mass function (pmf)
M	Feb	13	Expectation of a random variable
W	Feb	15	Review
F	Feb	17	**Exam 1**
M	Feb	20	Expectation of a function of a random variable
W	Feb	22	Variance
F	Feb	24	Moments
M	Feb	27	Moment generating function (mgf)
W	Feb	29	Examples of random variables
F	Mar	2	Examples of discrete distributions
M	Mar	5	Examples of continuous distributions
W	Mar	7	Joint distribution functions
F	Mar	9	Joint distribution functions (continued)
M	Mar	12	Spring Recess!
W	Mar	14	Spring Recess!
F	Mar	16	Spring Recess!
M	Mar	19	Marginal distributions
W	Mar	21	Marginal distributions (continued)
F	Mar	23	Problems

Date		Topic
M	Mar. 26	Review
W	Mar 28	**Exam 2**
F	Mar 30	*Cesar Chavez Day (no class)*
M	Apr 2	Independent random variables
W	Apr 4	mgf convergence theorem
F	Apr 6	The Central Limit Theorem
M	Apr 9	Simple random samples
W	Apr 11	Mean and variance of random samples
F	Apr 13	Sampling distribution
M	Apr 16	Conditional distribution
W	Apr 18	Conditional expectation
F	Apr 20	Covariance and correlation
M	Apr 23	Covariance and correlation (continued)
W	Apr 25	Review
F	Apr 27	**Exam 3**
M	Apr 30	Review
W	May 2	Review
Th	May 10	**Final Examination**