Descriptive List of Upper Division Statistics and Math Coursework

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All the following courses were at the University of California, Berkeley.

Completed Coursework in Statistics

Stat 135: Concepts of Statistics

- Grade: A+
- Instructor: Hank Ibser
- Texts Used: John A. Rice, *Mathematical Statistics and Data Analysis* and Deborah Nolan, *Stat Labs: Mathematical Statistics through Applications*
- Subject Matter: Statistical theory and methodology. Descriptive statistics, maximum likelihood estimation, non-parametric methods, Optimality, goodness-of-fit tests, analysis of variance, bootstrap and computer-intensive methods and least squares estimation.

Stat 134: Concepts of Probability

- Grade: A+
- Instructor: Hank Ibser
- Text Used: Jim Pitman, *Probability*
- Subject Matter: Conditional expectation, independence, laws of large numbers. Discrete and continuous random variables. Central limit theorem. The Poisson process, Markov chains, characteristic functions.

Stat 133: Concepts in Computing with Data

- Grade: A+
- Instructor: Gaston Sanchez
- Link to GitHub Site
- Subject Matter: Computationally intensive applied statistics. Data manipulation (wrangling, reshaping, tidying). Visualization and graphics. Programming concepts. Data technologies and reporting tools. Dynamic documents.

Completed Coursework in Mathematics

Math 104: Introduction to Analysis

- Grade: A
- Instructor: Michael Pejic
- Text Used: Kenneth A. Ross, *Elementary Analysis: The Theory of Calculus*

- Subject Matter: The real number system. Sequences, limits, and continuous functions in $\mathbb{R}$ and $\mathbb{R}^n$. Metric spaces. Uniform convergence, interchange of limit operations. Infinite series. Mean value theorem and applications. The Riemann integral.

Math 110: Linear Algebra

- Grade: A
- Instructor: Zvezdelina Stankova
- Text Used: Stephen H. Friedberg, *Linear Algebra*
- Subject Matter: Matrices, vector spaces, linear transformations, inner products, determinants. Eigenvectors. QR factorization. Quadratic forms and Rayleigh's principle. Jordan canonical form, applications. Linear functionals.

Math 113: Abstract Algebra

- Grade: A+
- Instructor: Alexander Paulin
- Text Used: Alexander Paulin, *Course Notes* (Link)
- Subject Matter: Sets and relations. The integers, congruences and the Fundamental Theorem of Arithmetic. Groups and their factor groups. Commutative rings, ideals and quotient fields. The theory of polynomials: Euclidean algorithm and unique factorizations. The Fundamental Theorem of Algebra. Fields and field extensions.

Computer Science 188: Artificial Intelligence

- Grade: A+
- Instructors: Anwar Baroudi and Daniel Fried
- Text Used: Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach*
- Subject Matter: Ideas and techniques underlying the design of intelligent computer systems. Search, game playing, knowledge representation, inference, planning, reasoning under uncertainty, machine learning, robotics, perception, and language understanding.

Current Courses

Stat 150: Stochastic Processes

- Grade: In Progress
- Instructor: Brett Kolesnik
- Text Used: Mark A. Pinsky and Samuel Karlin, *An Introduction to Stochastic Modeling*
- Subject Matter: Random walks, discrete time Markov chains, Poisson processes. Further topics such as: continuous time Markov chains, queueing theory, point processes, branching processes, renewal theory, stationary processes, Gaussian processes.

Stat 151A: Linear Modelling

- Grade: In Progress
- Instructor: Oscar Hernan Madrid Padilla
- Text Used: John Fox, *Applied Regression Analysis and Generalized Linear Models*

- Subject Matter: Linear and generalized linear models and their application. Linear regression, analysis of variance and covariance, random effects, design and analysis of experiments, quality improvement, log-linear models for discrete multivariate data, model selection, robustness, graphical techniques, in-depth case studies.

Math 128A: Numerical Analysis

- Grade: In Progress
- Instructor: Jon Wilkening
- Text Used: Richard L. Burden, *Numerical Analysis*
- Subject Matter: Programming for numerical calculations, round-off error, approximation and interpolation, numerical quadrature, matrix computations, and numerical solutions of ordinary differential equations.

Stat C100: Principles and Techniques of Data Science

- Grade: In Progress
- Instructors: Josh Hug and Fernando Perez
- Text Used: Sam Lau, *Principles and Techniques of Data Science*
- Subject Matter: Data science lifecycle, including question formulation, data collection and cleaning, exploratory data analysis and visualization, statistical inference and prediction, and decision-making. Programming for transforming, querying and analyzing data; algorithms for machine learning methods including regression, classification and clustering; principles behind creating informative data visualizations; statistical concepts of measurement error and prediction; and techniques for scalable data processing.