Course Overview
Successful business analysts and managers are increasingly required to be proficient at making data-driven decisions, rather than be reliant on experience and intuition alone. This course teaches you about the latest data-analytic methods applied to business situations, building on previous data analytics study, so that you can make informed business decisions based on your own analyses and on the work of data scientists in your organization.

- Presents data-analytic methods now used by leading-edge business practitioners
- De-mystifies the methods, going deep to show their strengths and weaknesses, trade-offs, and how to tune them for your own business situations
- Motivates/illustrates the methods with business case analyses
- Conducts business case analyses with R analysis software
- Serves also as a practical “how to” reference

Instructor Biography
Dr. Richard Huntsinger is a Fortune 500 operations executive, management consultant, research scientist, professor, and Silicon Valley entrepreneur with broad international experience leading data analytics, enterprise software development, system integration, and operational excellence programs at organizations like Hewlett-Packard, AT&T, Symantec, Hitachi, Exelon, Curtiss-Wright, and US Department of Energy. He currently serves as Executive Director of Berkeley Data Analytics Group, LLC, a data analytics consulting firm, and lectures at University of California-Berkeley. Recent projects include electricity demand forecasting in smart electric grids, enterprise data warehouse optimization in high-tech and telecom operations, and process automation in nuclear power plant operations. Dr. Huntsinger earned his PhD in Engineering & Public Policy from Carnegie Mellon University, MBA degrees from University of California-Berkeley and Columbia University, with honors, and MSc and BSc degrees in Computer Science from California State University-Chico, with honors. He holds ASQ Six Sigma Black Belt and PMI Project Management Professional certifications.

Course Outline

- **Data Exploration & Preparation Methods**
  - kernel density estimation, data imputation, principal component analysis
- **Descriptive Data-Analytic Methods**
  - Gaussian mixtures & expectation maximization
- **Predictive Data-Analytic Methods**
  - density-based, naive Bayes, support vector machines, neural networks, ensembles, multi-class, classification & regression forms
- **Model Evaluation & Tuning**
  - scoring, holdout testing, cross-validation, model & meta-parameter selection
- **Data-Analytic Methods for Special Data Types**
  - time series data, text data
- **Data Analysis Tools**
  - Jupyter, R, ggplot2, rgl
- **Business Case Analysis**
  - stock market, retail, lending, energy, real estate, bank fraud, call center, personnel, inventory

Suggested Preparation
A background in descriptive statistics and data analytics at the level of UGBA 104.