

Class

Websites:

Canvas (assignments and other materials)

Slack (discussion, announcements, etc.) #msan_621_2016

Time & Location:

Section 2: Tuesdays & Thursdays, 13:00 - 15:00

101 Howard, room 527

Special dates:

24th November 2016 (No meeting for Thanksgiving holiday)

12th December 2016 (Final exam)

Instructor

David Guy Brizan | dgbrizan@usfca.edu

101 Howard Street | 607

Office hours by appointment

Learning Outcomes

We will cover the following material:

- Basic Statistical Concepts
 - What is (machine) learning?
 - Training vs. testing
 - Resampling and cross validation
 - Model Assessment
- Supervised Learning
 - Regression: partial least squares, principal components regression, LASSO, ridge regression
 - Classification: k-nearest neighbors, linear discriminant analysis, logistic regression, naive Bayes classifiers
 - Tree-based methods: random forests, regression and classification trees
- Unsupervised Learning
 - Clustering: k-means, hierarchical clustering, spectral clustering
- Additional Topics (time permitting)
 - Neural Networks
 - Deep Learning

Textbooks

There is one primary textbook and two secondary textbooks for this course:

- *An Introduction to Statistical Learning with Applications in R* by James, Witten, Hastie and Tibshirani (primary)
- *Introduction to Machine Learning in Python* by Andreas C. Mueller and Sarah Guido (secondary)
- *The Elements of Statistical Learning* by James, Witten, Hastie and Tibshirani (secondary)

In addition to these textbooks, we will utilize online data and instructional resources listed on the course website or discussed in class.

Grades

The course grade will be assigned as follows:

A+	96.0 - 100
A	90 - 95.9
B+	86 - 89.9
B	80 - 85.9
C+	76 - 79.9
C	70 - 75.9
D+	66 - 69.9
D	60 - 65.9
F	< 60

The course grades will be calculated based on the following:

40%	Assignments	Assignments will cover both theory and computation with the purpose of providing you with the knowledge of when and how to implement machine learning algorithms to a given problem.
30%	Project	There is a single, group project for this course which evaluates the utility of machine learning algorithms on one or more data sets. Your individual grade will be partially determined by the members of your group, and the project must be presented in class, near the end of the semester.
30%	Exams	Expect two exams: one midterm and one final. Exams are closed-book, closed notes unless otherwise specified. Missed exams will receive a grade of 0.

Academic Integrity

As a Jesuit institution committed to *cura personalis* — the care and education of the whole person — USF has an obligation to embody and foster the values of honesty and integrity. USF upholds the standards of honesty and integrity from all members of the academic community. All students are expected to know and adhere to the University's Honor Code. You can find the full text of the code online at www.usfca.edu/academic_integrity. The policy covers:

- Plagiarism — intentionally or unintentionally representing the words or ideas of another person as your own; failure to properly cite references; manufacturing references.
- Working with another person when independent work is required.
- Submission of the same paper in more than one course without the specific permission of each instructor.
- Submitting a paper written by another person or obtained from the internet.
- The penalties for violation of the policy may include a failing grade on the assignment, a failing grade in the course, and/or a referral to the Academic Integrity Committee.

Students with disabilities

If you are a student with a disability or disabling condition, or if you think you may have a disability, please contact USF Student Disability Services (SDS) at 415 422-2613 within the first week of class, or immediately upon onset of disability, to speak with a disability specialist.

If you are determined eligible for reasonable accommodations, please meet with your disability specialist so they can arrange to have your accommodation letter sent to me, and we will discuss your needs for this course. For more information, please visit: <http://www.usfca.edu/sds> or call (415) 422-2613.

Behavioral Expectations

All students are expected to behave in accordance with the Student Conduct Code and other University policies (see <http://www.usfca.edu/fogcutter/>). Open discussion and disagreement is encouraged when done respectfully and in the spirit of academic discourse. There are also a variety of behaviors that, while not against a specific University policy, may create disruption in this course. Students whose behavior is disruptive or who fail to comply with the instructor may be dismissed from the class for the remainder of the class period and may need to meet with the instructor or Dean prior to returning to the next class period. If necessary, referrals may also be made to the Student Conduct process for violations of the Student Conduct Code.

Learning & Writing Center

The Learning & Writing Center provides assistance to all USF students in pursuit of academic success. Peer tutors provide regular review and practice of course materials in the subjects of Math, Science, Business, Economics, Nursing and Languages. Other content areas can be made available by student request. To schedule an appointment, log on to TutorTrac at <https://tutortrac.usfca.edu>. Students may also take advantage of writing support provided by Rhetoric and Language Department instructors and academic study skills support provided by Learning Center professional staff. For more information about these

services contact the Learning & Writing Center at 415.422.6713, lwc@usfca.edu or stop by Cowell 215. Information may also be found at twww.usfca.edu/lwc.

Counseling and Psychological Services

Our diverse staff offers individual, couple, and group counseling to student members of our community. Services are confidential and free of charge. Call 415.422.6352 for an initial consultation appointment. Having a crisis at 3 AM? We are still here for you. Telephone consultation after hours is available between the hours of 5:00 PM to 8:30 AM; call the above number and press 2.

Confidentiality, Mandatory Reporting and Sexual Assault

As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as a faculty member. I am required to share information regarding sexual misconduct or information about a crime that may have occurred on USFs campus with the University. Here are other resources:

- To report any sexual misconduct, students may visit Anna Bartkowski (UC 5th floor) or see many other options by visiting our website: www.usfca.edu/student_life/safer.
- Students may speak to someone confidentially, or report a sexual assault confidentially by contacting Counseling and Psychological Services at 415-422-6352.
- To find out more about reporting a sexual assault at USF, visit USFs Callisto website at: www.usfca.callistocampus.org.
- For an off-campus resource, contact San Francisco Women Against Rape (SFWAR) (415) 647-7273 (www.sfwar.org).