

- **Instructor:** Dr. Marc G. Genton

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Phone: 548-0889

Office: Blocker 502B

Office hours: Wed. 3-5pm

- **Preq:** STAT 610/611

- **Course Schedule:** T R: 2:20-3:35PM in Blocker 411

- **Web page:** <http://www.stat.tamu.edu/~genton/STAT689/STAT689.09.html>

- **Course Objectives:** By the end of the course, the student will be able to:

- (1) Understand and describe various methods of machine learning and data mining.
- (2) Apply various methods of machine learning and data mining to real data sets.
- (3) Use the software *R* to perform machine learning and data mining on real data sets.

- **Course Outline:**

Data and Databases; Model Assessment and Selection in Multiple Regression; Linear Dimensionality Reduction; Linear Discriminant Analysis; Recursive Partitioning and Tree-Based Methods; Support Vector Machines; Committee Machines; Latent Variable Models for Blind Source Separation; Nonlinear Dimensionality Reduction and Manifold Learning.

- **Textbook (required):**

- Izenman, A. J. (2008), Modern Multivariate Statistical Techniques: Regression, Classification, and Manifold Learning. Springer.

- **Other book:**

- Hastie, T., Tibshirani, R., Friedman, J. (2008), The Elements of Statistical Learning: Data Mining, Inference, and Prediction. Springer, Second Edition.

- **Course work:** Your grade for the course will be based on (relative weights given in %):

- **Homework assignments (50%):** Bi-weekly homework assignments will be given throughout the semester. Assignments will be collected at the START of class on the date due. Late assignments will not be accepted.

- **Project (50%):** A project, done individually, will be due near the end of the semester, and presented in class (20 minutes). More details will be given as the semester progresses. Late projects will not be accepted.

The following letter grades are guaranteed:

A	B	C	D	F
100-90%	90-80%	80-70%	70-60%	60-0%

- **ADA Statement:** STATEMENT ON DISABILITIES: The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Office of Disabilities Services in Room B118, Cain Hall. The phone number is 845-1637.
- **Plagiarism Statement:** STATEMENT ON PLAGIARISM: The handouts used in this course are copyrighted. By “handouts,” I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission. As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section “Scholastic Dishonesty.”
- **Academic Integrity Statement:** “An Aggie does not lie, cheat, or steal or tolerate those who do.” <http://www.tamu.edu/aggiehonor>
- **Notes:**
 - Check the website frequently for updates!
 - I would like to know about any particular academic difficulties or personal problems that are affecting a student’s performance.

August 31, 2009. Marc G. Genton