MATH 3180 Section 801

Course and Instructor Information

- **Course Title:** Mathematics for Machine Learning
- **Credits:** 3
- **Format/Meet Times:** In-Person, MW, 4:40-5:55, Room 139.
- **Prerequisites:** MATH 2110Q and 2210Q.
- **Recommended preparation:** MATH 3160.
- **Professor:** Dr. Kevin Kellinsky-Gonzalez (Prof. K / Dr. K)
- **Email:** `kevin.kellinsky-gonzalez@uconn.edu`
- **Office:** 3.31B

Extra Help / Office Hours

I will host office hours on Wednesday from 2:30-4:30 or by appointment. Please feel free to stop by.

Course Description

Course Description from Course Catalog: Applications of elementary linear algebra, probability theory, and multivariate calculus to fundamental algorithms in machine learning. Topics include the theory of orthogonal projection, bilinear forms, and the spectral theorem to multivariate regression and principal component analysis; optimization algorithms such as gradient descent and Newton's method applied to logistic regression; and convex geometry applied to support vector machines. Other topics include Bayesian probability theory and the theory of convolution especially as applied to neural networks. Theory illustrated with computer laboratory exercises.

Course Objectives

At the end of a successful completion of this course, students will be able to apply tools and techniques from linear algebra, calculus, probability, and more to problems in machine learning.

Recommended Course Materials

Mathematics for Machine Learning by Deisenroth et. al.

Course Requirements and Grading

We will have 2 exams. We will have a final project in liue of a final exam. Students will form small groups and select a topic relevant to the course. The instructor will need to approve the topic. Groups will then write a short paper on the topic and present their results to the class. More details later.

Summary of Course Grading:

Course Components	**Weight**
Regular Exams	50%
Final Project	30%
Homework	20%

Grading Scale:

Range	**Grade**
92.5–100	A
89.5–92.4	A-
86.5–89.4	B+
82.5–86.4	B
79.5–82.4	B-
76.5–79.4	C+
72.5–76.4	C
69.5–72.4	C-
66.5–69.4	D+
62.5–66.4	D
59.5–62.4	D-
0–59.4	F

Note: At the end of the semester, grades will not be increased unless there is an error in the gradebook. Please do not ask me to increase your grade. The answer is no.

Academic Integrity / Cheating Policy

Academic integrity is essential. Any form of dishonesty can result in a zero grade on an assessment and/or failure in the course. **In particular, if I see you using a phone during a quiz or exam, you will receive a zero. I will not give you a warning; I will simply give you a zero. Any zero that is the result of cheating will NOT be dropped.**

Accommodations for Students with Disabilities

Students requiring accommodations should contact the Center for Students with Disabilities:

- Wilbur Cross Building Room 204
- Phone: (860) 486-2020
- Website: `http://csd.uconn.edu/`

Changes to the Syllabus

The syllabus may be subject to change with reasonable advance notice as deemed appropriate by the instructor.