

EECE 5440 Computational Data-Driven Modeling I

Computational Data-Driven Modeling (CDM) I is the first in a sequence of two courses designed to introduce the student to basics skills in exploratory data analysis and data-driven computational modeling using foundational concepts drawn from linear algebra, probability, statistics, random processes, time-series analysis and dynamical systems. In CDM-1 students will learn to apply regression and classification algorithms on multivariate data and assess performance of these models. An interactive project-driven approach is taken using the Python programming platform and its associated open-source libraries for statistical modeling, data analysis and machine-learning. A review of the tools and techniques from probability and statistics will be undertaken.

- i. Instructor: Charles Thompson (charles_thompson at uml.edu)
- ii. Course lecture schedule: Wed 6:30-9:30 pm
- iii. Course website: <https://morseatuml.us>
- iv. Text: Pattern recognition and machine learning, C. Bishop
- v. Reference Text: Machine learning: A probabilistic approach, K. P Murphy; Probability, random variables, and stochastic processes, A. Papoulis
- vi. Grading: The final grade is based on homework assignments(50%), a midterm exam(20%) and a final project(30%). The final project consists of an analysis of a student proposed dataset. The proposed dataset and scope of the analysis is to be introduced via one-page preliminary report submitted to and approved by the instructor. Each student will make an oral project presentation at the end of the semester. A final report documenting the analysis and results is also required.