

Instructor

Prof. Samuel (Sam) Cho

Office Hours: TBA

Email: choss@wfu.edu

Course Information

Location and Time: Manchester 024

MWF 2-2:50p (Jan 14 – May 1)

Course Overview

An introduction to concepts and application of machine learning algorithms and techniques. Machine learning is an active and growing field that would require many courses to cover completely. This course aims at the middle of the theoretical versus practical spectrum. We will learn the theoretical concepts behind several types of machine learning algorithms and gain practical experience applying them. Prerequisites: CSC 221 and MTH 121.

Required Textbooks

Since machine learning is a rapidly changing field, there are a number of useful texts for this course but each covers only some part of the class material. While information from various sources will be used in the class, we will be primarily focused on the following textbook:

Required: *Python Machine Learning*, 2nd Edition, Sebastian Raschka; ISBN 978-1-78712-593-3

Recommended: *Python and Matplotlib Essentials for Scientists and Engineers*, Matt A. Wood; ISBN 978-1-6270-5620-5

Grading Scheme

40%	Projects (4)
15% & 25%	Tests (2)
20%	Final Exam

Projects

All assigned projects will be submitted via the course's Sakai Drop Box, and they are due at 12:00 pm EST on the day that it is due. No late work will be accepted.

Academic Misconduct

Wake Forest is an academic community that subscribes to an honor system. By accepting membership in this community, each student assumes the obligation to

be trustworthy in all pursuits. Unless otherwise specified, all work submitted for this course should be your own work (or that of your group if a group project) and reflect your understanding of the material. Using all or portions of work from current students, previous students, or Internet-based resources, as well as sharing your work with other students, are not acceptable and are considered a violation of academic integrity. Violations will be handled through the WFU Honor System mechanisms. It is recommended that you retain drafts of your assignments and programs until the end of the semester in case a question arises as to authorship.

In short, ***don't do it!*** If you get caught, the consequences are very unpleasant.

Accommodations

If you have a learning issue that may require an accommodation for taking this course, then please contact the Learning Assistance Center (336-758-5929) within the first two weeks of the semester.

University Closures

In case of university closures or delayed openings due to inclement weather, pandemic, or other unusual conditions, we will follow the standard Wake Forest University procedures. Please study from the textbook and the assigned reading (see course schedule). *If necessary, completely ignore these instructions and run for your lives.*

Tentative Lesson Plan

Note: subject to change, see website for latest version

Week	Topic	Reading
1	Introduction to Machine Learning	Chapter 1
2	Training Simple Machine Learning Algorithms for Classification	Chapter 2
3	Machine Learning Classifiers using Scikit-Learn (Perceptron and Logistic Regression)	Chapter 3
4	Machine Learning Classifiers using Scikit-Learn (Regularization and Support Vector Machines)	Chapter 3
5	Midterm Test 1	Chapters 1-3 (2/13)
6	Machine Learning Classifiers using Scikit-Learn (Decision Trees)	Chapter 3
7	Data Preprocessing	Chapter 4
8	Model Evaluation and Hyperparameter Tuning	Chapter 6
9	Spring Break	--oOo—oOo—oOo--
10	Ensemble Learning & Sentiment Analysis	Chapter 7 & 8
11	Midterm Test 2	Chapters 3, 4, 6-8 (3/27)
12	Regression Analysis	Chapter 10
13	Cluster Analysis	Chapter 11
14	Deep Neural Networks	Chapter 12
Final Exam – Cumulative		May 8, 2019 at 2:00pm