

DATASCI 450 Course Syllabus

Instructor Name: Dr. Wee Hyong Tok

Instructor E-mail:- tokwh@uw.edu

This course is designed to pull together what has been learned so far about the structuring and manipulation of data and core statistical and machine learning techniques and add knowledge on the machinery used to leverage those techniques in real-world scenarios in which data scientists are asked to generate knowledge. Students will be asked to apply the course content to real-life scenarios and think creatively as well as critically through issues. The expectation is that by the end of the class, students will be able to attack data sciences questions impacting their business; establish robust experimental tests of data-driven hypotheses, generate meaningful and reliable findings and communicate them clearly. Information will also be provided during the quarter for students to read further on topics if desired.

Course Objectives

Upon successfully completing this course, you will be able to

- Understand and select between different modeling approaches for different problem types – classification, regression, clustering, dimensionality reduction/data compression, topic modeling.
- Implement experimental designs and build models.
- Understand over- and under-fitting, and make intellectual and mathematical trade-offs using Occam's razor (eg. reformulating maximum likelihood to include BIC or AIC), use of evaluation metrics such ROC curves, confusion matrices to improve model performance.

Course Requirements

Completion Requirements

To successfully complete this course, you must:

- read the course materials;
- participate in the meeting room as directed; and
- complete and submit all assignments including the final project;

Course Preview

- 5 homework assignments
- 1 final capstone project

About the Course

This course consists of 10 lessons designed to be completed within an academic quarter as well as 6 graded assignment. 5 quizzes and a final capstone project.

See the DATASCI 450 Course Outline for a list by lecture of lesson, techniques, practices and homework in this course.

Assignments

There are 6 assignments in this course that are designed to help you meet the learning objectives for the lesson. Instructions are provided within each assignment, as well as specific guidelines and/or a grading rubric.

Assignment Submission Guidelines

Written assignments will be uploaded as MS Word documents to your My Course page. For all assignments:

- Be sure to include your name, course number, and assignment number at the top of your assignment.
- Always save a copy of your work as a precaution.

Course Project

Discussed in detail in class.

Assessment and Grading

In order to pass, a student must:

- Attend 4 out of the 5 classes
- Complete all required assignments.
- Attend the first and last onsite classes.
- Participate in onsite and online activities, in-class discussions, and on-line forum.

Assessment Criteria

Detailed instructions and evaluation criteria are provided with each assignment. That said, here are some general criteria your instructor will look for evidence as that you can

- identify and apply the appropriate legal rules to the questions asked;
- synthesize and analyze information from a variety of cases;
- evaluate the evidence used to support or refute legal arguments;
- argue persuasively your understanding of the law as it pertains to the questions asked;
- organize effectively information and your own ideas; and
- express your thoughts clearly and concisely.