Course Number	CS 434	Course Title	Learning from Data
Semester Hours	3	Course Coordinator	Norman Carver
Catalog Description	An introduction to classical machine learning theory and practical techniques. Topics to be covered include computational learning theory (VC theory), linear classification and regression models, SVMs and kernel methods, decision trees, the bias-variance tradeoff, overfitting, and regularization.		

Textbooks

References

- Mitchell, T. (1997). *Machine Learning*. McGraw-Hill Education. ISBN: 978-0070428072.
- Bishop, C. (2013). *Pattern Recognition and Machine Learning*. Springer. ISBN: 978-8132209065.

Course Learning Outcomes

- Obtain the theoretical knowledge needed to understand the basis of machine learning.
- Obtain knowledge of classical machine learning methods.
- Obtain practical knowledge for successfully applying standard learning methods to real-world problems.

Assessment of the Contribution to Student Outcomes

Outcome →	1	2	3	4	5	6	7
Assessed →	X	X	X				X

Prerequisites by Topic

CS 330 with a grade of *C* or better or graduate standing.

Major Topics Covered in the Course

1. Introduction to Machine Learning (3 lectures)
2. Computational Learning Theory (6 lectures)
3. Linear Models for Learning (12 lectures)
4. Support Vector Machines and Kernel Methods (9 lectures)
5. Decision Tree Learning (3 lectures)
6. Issues in Machine Learning (7 lectures)

NOTE: When course is taken as 500-level credit (CS 591 “Special Topics”), there will be additional requirements such as a research project.

Added: Fall 2020