Dillard College of Business Administration

BUAD 5643: Machine Learning Applications
Online Class
Spring 2025

Contact Information

Instructor: Dr. Andrew Holt
Email: Andrew.holt@msutexas.edu
Office: Dillard Building 217
Office Hours: Tuesday: 12pm – 2pm (in-person and online)
Wednesday: 12pm – 1pm (in-person and online)
Thursday: 12pm – 2pm (in-person and online)
By appointments Monday-Friday 9am-12pm or online.

The subject line of any email you send to me must be "**MachLearn: subject"**. For example, if you are wondering when the next exam is, then the subject line for the email should be "**MachLearn: Next Exam Date?**" If the subject line is wrong, then I will ignore your email or maybe I will ask you to resend your email with the correct subject line**.**

Course Materials

- Introduction to Statistical Learning Python Edition, 1st Edition
- A working webcam along with Lockdown Browser and Respondus Monitor
- Python 3: Download Python 3 onto your computer.
- Anaconda: Go to https://www.anaconda.com and install the free version of anaconda. We will use Spyder to code in Python.

Course Description

This is a graduate course intended to introduce you to the field of statistical learning. Student's will learn about a variety of statistical learning techniques and how to implement them using Python.

Objectives:

General Learning Goals: Students will be asked to demonstrate their critical thinking and problem-solving skills by applying statistical learning techniques in their homework assignments and exams. This course aims to contribute to developing students' ability to communicate their analyses in a professional manner. Student's will have to integrate the statistical knowledge they acquire from this course with multiple business disciplines.

Course Specific Learning Goals: Students will learn topics including Linear Regression, KNN Regression, Classification, Resampling, Ridge and Lasso Regressions, Dimension Reduction techniques, Spline Regressions, and Tree-Based methods. While we will mostly focus on intuition this class will also be useful as an introduction to Python coding.

Assessments:

1. Homework Assignments: There will be 7 homework assignments. The types of questions on the homework will be similar to the types of questions on the exams.
    a. Homework should be done ***individually***.
    b. Students who submit work from previous semesters or who work together will receive a 0 on the assignment.
    c. All "writing" assignments must be printed off and answered by hand using a pen or pencil.
2. Exams: There will be two exams: a mid-term that will cover chapters 1-4 and a final which will cover chapters 1-8. Exams will be roughly 50 minutes. Students will be required to take exams online with a webcam turned on. I will monitor the recordings. Student's will not be allowed to use notes on the exam. ***If a student's eyes move away from the monitor I will give the student a 0 on the exam.***

Missed Exam Policy:

If you miss one of the midterm exams, then 90% of your grade on the final will replace the missing grade. So, if you miss the first exam and make a 100% on the final, then you only get 27 points for the midterm that you missed.

Grading:

Assignment	Points
Homework Assignment #1	10
Homework Assignment #2	10
Homework Assignment #3	10
Homework Assignment #4	10
Homework Assignment #5	10
Homework Assignment #6	10
Homework Assignment #7	10
Midterm Exam	30
Final Exam	30

A= 89.5-100% C =69.5-79.5%
B= 79.5-89.5% D= 59.5-69.5% F= <59.5%

Cheating:

Again, we will be using Respondus Monitor and LockDown Browser for the exams. I will monitor the recordings. Student's will not be allowed to use notes on the exam. If a student's eyes move away from the monitor during an exam, I will give the student a 0 on the assignment.

Plagiarism Statement:

``By enrolling in this course, the student expressly grants MSU a "limited right" in all intellectual property created by the student for the purpose of this course. The "limited right" shall include by not be limited to the right to reproduce the student's work product in order to verify the originality and authenticity.''

Americans with Disabilities Act

This course follows the university policies and guidelines suggested by the Disability Support Services Office for qualified students. Students are referred to the Midwestern State University Undergraduate Catalog for details.

Campus Carry Policy

Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from concealed carry are appropriately marked, in accordance with state law. For more information regarding campus carry, please refer to the University's webpage at link to MSU campus carry rules and policies.

Syllabus Change Policy

This syllabus is a guide for this course and is subject to change with advanced notice.
References

Midwestern State University Student Handbook

Midwestern State University Undergraduate Catalo

Course Content

Week	Dates	Topic	Chapter	Homework
1	January 19 – January 25	Statistical Learning	2	
2	January 26 – February 1	Statistical Learning	2	HW 1 Due
3	February 2 – February 8	Linear Regression	3	
4	February 9 – February 15	Linear Regression	3	HW 2 Due
5	February 16 – February 22	Classification	4	
6	February 23 – March 1	Classification	4	HW 3 Due
7	March 2 – March 8	Exam		Exam 1
8	March 9 – March 15	Spring Break		
9	March 16 – March 22	Polynomials and Splines	7	
10	March 23 – March 29	Polynomials and Splines	7	HW 4 Due
11	March 30 – April 5	Resampling	5	HW 5 Due
12	April 6 – April 12	Shrinkage and PCA	6	
13	April 13 – April 19	Holiday Break		
14	April 20 – April 26	Shrinkage and PCA	6	HW 6 Due
15	April 27 – May 3	Trees	8	
16	May 4 – May 10	Trees	8	HW 7 Due
17	May 11 – May 17	Exam		Exam 2