GWU

CS 4364/6364

Introduction to Machine Learning, Spring 2022

GWU Computer Science

- Syllabus
- Schedule and Lectures
- Assignments
- Ed Discussion Board
- Blackboard

Schedule

How to read:

- The Schedule is divided into weeks
- **Topic** indicates the main concepts and the link for the activity
- **Due** indicates the assignments that you must complete before this lecture.
- The schedule is tentative, and may need to be adjusted during the semester

Spring 2022

Date	Topic	Due
Week 1		
Tues 01/11 and Thurs 01/13	Introduction: Syllabus, introduction to course Lecture 0: Introduction to machine learning, project selection and discussion, environment setup	Pick homework groups of four students (post to Ed) Project 0: Environment setup (due 01/17 11:59pm) Optional: Group project proposal (due 01/19 at 11:59pm)

Date	Topic	Due
Week 2		
Tues 01/18 and Thurs 01/20	Lecture 1: classification: decision trees Lecture 2: classification: ensembles	Homework 1 (due 01/24 at 11:59pm) Homework 2 (due 01/26 at 11:59pm)

Date	Topic	Due
Week 3		
Tues 01/25 and Thurs 01/27	Lecture 3: classification practical issues: dataset engineering Lecture 4: classification practical issues: model training and evaluation	Homework 3 (due 01/31 at 11:59pm) Homework 4 (due 02/02 at 11:59pm)

Date	Topic	Due
Week 4		
Tues 02/01 and Thurs 02/03	Lecture 5: Exam 1 Tuesday sample Exam 1 Lecture 6: Go over Exam 1, begin Project 1 (or group project)	Individual Project 1: Tabular data and RandomForests (due 02/14 11:59pm) Group project: under the Project 1 that covers grading rubric through "14. Discuss and implement how you will handle any dataset imbalance." Include the modified grading rubric for all items up to this point if you are using one. (due 02/14 11:59pm on BB using Project 1 link)

Date	Topic	Due
Week 5		
Tues 02/08 and Thurs 02/10	Lecture 7: Regression, Linear models Lecture 8: ~~HPC group guest lecture~~ Gradient descent I	

Date	Topic	Due
Week 6		
Tues 02/15 and Thurs 02/17	Lecture 9: Gradient descent II Lecture 10: Perceptrons	

Date	Topic	Due
Week 7		
Tues 02/22 and Thurs 02/24	Lecture 11: start Neural Nets Lecture 12: continue Neural Nets	Homework 5 (due 02/28 at 11:59pm)

Date	Topic	Due
Week 8		
Tues 03/01 and Thurs 03/03	Lecture 13: finish Neural Nets Lecture 14: Deep Learning: CNNs	Homework 6 (due 03/07 at 11:59pm)

Date	Topic	Due
Week 9		
Tues 03/08 and Thurs 03/10	Lecture 15: Guest speaker: States, sequences, Hidden Markov Models, Active learning and reinforcement learning Lecture 16: Kernels, SVM, and KNN	Homework 7 (due 03/21 at 11:59pm) study for exam next week

Date	Topic	Due
Week 10		
Tues 03/15 and Thurs 03/17	NO CLASS -- SPRING BREAK!	

Date	Topic	Due
Week 11		
Tues 03/22 and Thurs 03/24	Lecture 17: Recommendation Systems, sample Exam 2 Lecture 18: Exam 2 Thursday	Begin Individual Project 2: CNNs (due 04/05 at 11:59pm) Group project: submit to BB code that covers grading rubric through "48. Graph training versus validation accuracy using matplotlib.pyplot (or other). Score your model on its predictions on the holdout. Discuss why you think your results will or will not generalize." Include the modified grading rubric for all items up to this point if you are using one. (due 04/07 11:59pm -- submit code to BB under Project 2 link please)

Date	Topic	Due
Week 12		
Tues 03/29 and Thurs 03/31	Lecture 19: Go over Exam 2, work on Project 2 Lecture 20: Unsupervised learning, NLP intro	Homework 8 (as EXTRA CREDIT, due 04/04 at 11:59pm)

Date	Topic	Due
Week 13		
Tues 04/05 and Thurs 04/07	Lecture 21: Natural Language Processing, BERT Lecture 22: Testing for Machine Learning Go over Project 3 instructions	Begin Individual Project 3 (due 04/21 11:59pm) Group project: Complete gradic rubric through item 57 (due 12/03 at 11:59pm), and prepare a ten minute (powerpoint) presentation of your results for following classes (due 04/21 at 11:59pm). You do not need to have items 48-57 done by this presentation, but can if you want to.

Date	Topic	Due
Week 14		
Tues 04/12 and Thurs 04/14	Lecture 23: Generative Advesarial Networks (GANs, guest speaker) Lecture 24: Group project demos 1	Project 3: real world modeling (due 12/10 11:59pm) Group project: Code submitted to BB, with markdown used to annotate each grading rubric item (copy the sentence from the rubric into your comments). (due 04/22 11:59pm under Project 3 link on BB)

Date	Topic	Due
Week 15		
Tues 04/19 and Thurs 04/21	Lecture 25: Group project demos 2 Lecture 26: Review for final exam: sample exam	study for final exam

Date	Topic	Due
Week 15		
Tues 04/26 and Thurs 04/28	NO CLASS - MAKEUP DAY NO CLASS - READING DAY	study for final exam

Date	Topic Prep

FINALS

See official final exam time for CS4364 (note: GWU may change the date/time)