Fall 9-1-2000

CS 457.01: Introduction to Machine Learning

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Course Syllabus – CS 457, Fall 2000

Course Information

Course:	CS 457 - Intro to Machine Learning
Lecture time:	TR 9:40 - 11:00
Lecture room:	SS 362
Professor:	David Opitz
Email:	opitz@cs.umt.edu
Office:	SS 417
Office phone:	243-2831
Office hours:	Monday 2:00-4:00
	Wednesday 1:00-2:00
	Thursday 11:00-12:00
	By appointment
	Whenever my office door is open

Course Objectives

Machine Learning is concerned with computer programs that automatically improve their performance through experience. Machine Learning methods have been applied to problems such as learning to drive an autonomous vehicle, learning to recognize human speech, learning to detect credit card fraud, and learning strategies for game playing. This course covers the primary approaches to machine learning from a variety of fields, including inductive inference of decision trees, neural networks, Bayesian learning, nearest neighbor, genetic algorithms, reinforcement learning, and data mining principles. The course will also cover theoretical concepts such as inductive bias and Occam's Razor.

A secondary objective of the course for CS 596 is to teach students how to conduct basic research. Therefore, each 596 student will conduct a project that is based on machine learning research at UM. Students may either pick from a group of proposed projects written by the instructor, or write a project proposal themselves.

Topics and Readings

We will cover most of chapters 1-6, 8, 9, 13. This will cover an introduction to concept learning, decision trees, neural networks, instance-based learning, genetic algorithms, Bayesian learning and reinforcement learning. If time allows, we will also discuss chapters 11 and 12 – analytical learning and hybrid approaches to learning. Supplemental material will be handed out as needed.

Required Material

- Tom M. Mitchell, *Machine Learning*, McGraw-Hill, 1997.

Important Dates

Last day to drop/add by Dial Bear:	September 25
Last day to drop/add (no $$$ back):	October 16
Last day to withdraw:	December 8
Last day for drop petition Fall 2000:	December 15
Final Exam time slot:	10:10-12:10 Thursday, December 21

Grading Basis

	CS 457	CS 596
Midterm Exam	30%	25%
Final Exam	30%	25%
Homework	40%	30%
Project		20%

Prerequisites

The prerequisites for this course are one year of programming and one year of calculus.

Policies

- All assignments will be collected at the beginning of class on the due date. Late assignments will be penalized 20% per working day (handing homework in *after* the beginning of class on the *same* day will be considered one day late).
- I will not give exams early, and makeups will only be allowed under dire circumstances (e.g., severe illness or death in family). I *must* be informed in advance of the scheduled exam.
- Programming and homework assignments must be your own work. While you are encouraged to discuss general ideas with others in class, the work you hand in must be your own. If you are having difficulties, please see me. Duplication of work or plagiarism in any form is considered to be *cheating*, and will be dealt with in accordance with UM and Department guidelines.