

# CS773C Machine Intelligence

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SEM 223 (784-4315)

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## Catalog Description

Advanced applications. Self-organizing, self-adapting systems; cybernetics; neural networks; automated decision making and control; learning automata; expert systems application; knowledge and data engineering; pattern recognition, image processing.

**Prerequisite:** An undergraduate class in Artificial Intelligence

## TextBooks

- **Recommended:** Tom Mitchell, *Machine Learning*, 1997, McGraw Hill
- **Recommended:** David E. Goldberg, *Genetic algorithms in search, optimization and machine learning*, 1989, Addison-Wesley.
- **Recommended:** Russell and Norvig, *Artificial Intelligence, A Modern Approach*, Third Edition, 2010, Pearson.

## Office hours

- MTW from 10 a.m. - 11 a.m.
- And by appointment. Send email to [sushil@cse.unr.edu](mailto:sushil@cse.unr.edu)

## Syllabus

This class will use machine learning techniques to attack real world problems. We will focus on three major techniques:

- Decision trees
- Neural networks
- Genetic algorithm based classifier systems

For each of these techniques, you will write code to implement the technique and demonstrate learning performance on a simple (clean data) problem. A good source of clean machine learning data can be found at the University of California, Irvine's Machine Learning Repository.

Subsequently, you will apply all three techniques to a real world problem of **our** choosing. You may work in groups for this portion and each group member will get the same grade.

Groups are encouraged but need my permission. Project presentations will be at the end of the semester. While working on your problem, you will be asked to find, read, and present papers pertaining to your

problem, or that you find interesting. Become familiar with library and internet resources. In addition to your presentations, there may be research presentations from graduate students, faculty, and other speakers.

Please look in <http://www.cse.unr.edu/~sushil> for pointers to papers and other information useful for this course. I would like each of you to set up a web page and keep a pointer to your work (graphical and textual). All assignments will be turned in by posting them on your web page and sending me a link. Here's a department link on how to set up a web page.

If you do not already have one, you will need to get an account on CSE department machines. Do this at the end of the first class. To get a CSE account, go to the IT page.

Your grade will depend on assignments, presentations, one midterm exam, and final project. I will expect to see you after each presentation to discuss the presentation and assign you a grade. **Any person or group producing publishable work gets an automatic A.**

Your grade will be calculated from the following table.

Item	Percentage
Assignments	30%
Presentations	20%
Project and Report	50%

## Communications

If I need to communicate with the class as group I'll place a notice on the class web page. You are required to check the website and your email every day. Get yourself a cs account and implement mail forwarding if you need to. Other Internet resources can be found on the class web page

## Services

Academic Success Services: Your student fees cover usage of the Math Center (784-4433 or [www.unr.edu/mathcenter/](http://www.unr.edu/mathcenter/)), Tutoring Center (784-6801 or [www.unr.edu/tutoring/](http://www.unr.edu/tutoring/)), and University Writing Center (784-6030 or <http://www.unr.edu/writing/>). These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

## Statement on Audio and Video Recording

Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may be given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.