

# CSC 2515

## Introduction to Machine Learning

Lectures: Thursday 2:10-4  
Lecture Room: Bahen 1160  
Instructor: Richard Zemel  
Instructor email: <csc2515prof@cs.toronto.edu>  
Office hours: Thursday 4-5 Pratt 290D  
TA email: <csc2515ta@cs.toronto.edu>  
Tutorials: Tuesday 3:10-4  
Tutorial Room: Same as lecture  
Class URL: [www.cs.toronto.edu/~zemel/Courses/CS2515](http://www.cs.toronto.edu/~zemel/Courses/CS2515)

### Readings

There is no required textbook for this course. There are several recommended books. On the course webpage I will post pointers to relevant readings from *Pattern Recognition and Machine Learning* by Chris Bishop and from *Machine Learning: A Probabilistic Perspective* by Kevin Murphy. I will also provide pointers to other online resources.

### Questions & discussion

We will be using Piazza, at [piazza.com/utoronto.ca/fall2015/csc2515/home](http://piazza.com/utoronto.ca/fall2015/csc2515/home), in the class for questions and discussion and also for announcements. Register to have access at: [piazza.com/utoronto.ca/fall2015/csc2515](http://piazza.com/utoronto.ca/fall2015/csc2515).

### Course requirements and grading

The format of the class will be lecture, with some discussion. I strongly encourage interaction and questions. There are assigned readings for each lecture that are intended to prepare you to participate in the class discussion for that day.

The grading in the class will be divided up as follows:

Assignments	40%
Exam	25%
Project	35%

There will be two assignments; each is worth 20% of your grade.

## Exams

There will be an exam in the last class meeting, on December 3<sup>rd</sup>, which will be a closed book exam on all material covered up in the lectures, tutorials, and assignments. You will only be responsible for topics in the readings covered in the lectures, tutorials, and assignments.

## CLASS SCHEDULE

Shown below are the topics for lectures and tutorials (in italics), as are the dates that each assignment will be handed out and is due. All of these are subject to change. The notes from each lecture and tutorial will be available on the class web-site the day of the class meeting.

<b>Date</b>	<b>Topic</b>	<b>Assignments</b>
Sep 17	Introduction	
<i>Sep 22</i>	<i>Probability for ML &amp; Linear regression</i>	
Sep 24	Basic Methods & Concepts	
<i>Sep 29</i>	<i>Optimization for ML</i>	
Oct 1	Nonparametric methods	Asst 1 Out
<i>Oct 6</i>	<i>kNN &amp; Decision trees</i>	
Oct 8	Probabilistic Classifiers	
<i>Oct 13</i>	<i>Naive Bayes &amp; Gaussian Bayes classifiers</i>	
Oct 15	Neural Networks	
<i>Oct 20</i>	<i>Deep learning</i>	Asst 1 In
Oct 22	Clustering	
<i>Oct 27</i>	<i>Mixtures of Gaussians</i>	Asst 2 Out
Oct 29	Continuous Latent Variable Models	Project Proposals In
<i>Nov 3</i>	<i>PCA</i>	
Nov 5	Kernel Methods	
<i>Nov 10</i>	<i>SVMs</i>	Asst 2 In
Nov 12	Structured Prediction Models	
<i>Nov 17</i>	<i>Structured SVMs</i>	
Nov 19	Ensemble Methods	
<i>Nov 24</i>	<i>Boosting &amp; Mixture of experts</i>	
Nov 26	Reinforcement Learning	
<i>Dec 1</i>	<i>Review for Test</i>	
Dec 3	Test; Speech Recognition	
Dec 16		Projects In