

CSCI-4155 & CSCI 6505 — Machine Learning & Robotics Course Syllabus

1 Instructor Information

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Course Homepage:	www.cs.dal.ca/~tt/CSCI415510
Course TA:	TBA

2 Course Description

This course discusses learning theories and demonstrates these strategies with robots. The topics include supervised learning, in particular maximum likelihood estimation in stochastic models and statistical learning theory including support vector machines, unsupervised learning which included generative models, expectation maximization, and Boltzmann machines, and reinforcement learning including Markov decision processes and temporal difference learning. The course includes introductions to the MATLAB programming environment, a refresher of basic probability theory, and the use of a robotics environment.

3 Required Texts

There is no required text for the course. Course notes will be posted on the course web site. But we recommend the following additional reading:

Russell & Norvig, *Artificial Intelligence: A modern approach*, Prentice Hall

Lecture notes by Andrew Ng: <http://www.stanford.edu/class/cs229/materials.html> and <http://www.stanford.edu/class/cs229/lectures/>

Christopher Bishop's, *Pattern Recognition and Machine Learning*, Springer 2006.

Richard Sutton and Andrew Barto, *Reinforcement Learning: An Introduction*, MIT press, 1998.

S. Thrun, W. Burgard, and D. Fox, *Probabilistic Robotics*, MIT Press 2005.

4 Evaluation

- **CSCI 4155:** 40% Assignments, 30% Tests, 30% Project
- **CSCI 6505:** 30% Assignments, 30% Tests, 40% Project
- Grades will be assigned using the letter grade scale as defined in section 17.1 of Dalhousie Academic Calendar.

5 Academic Integrity¹

At Dalhousie University, we respect the values of academic integrity: honesty, trust, fairness, responsibility and respect. As a student, adherence to the values of academic integrity and related policies is a requirement of being part of the academic community at Dalhousie University.

¹Based on the sample statement provided at <http://academicintegrity.dal.ca>. Written by Dr. Alex Brodsky.

What does academic integrity mean?

Academic integrity means being honest in the fulfillment of your academic responsibilities thus establishing mutual trust. Fairness is essential to the interactions of the academic community and is achieved through respect for the opinions and ideas of others. Violations of intellectual honesty are offensive to the entire academic community, not just to the individual faculty member and students in whose class an offence occurs. (see Intellectual Honesty section of University Calendar)

How can you achieve academic integrity?

- Make sure you understand Dalhousie's policies on academic integrity.
- Give appropriate credit to the sources used in your assignment such as written or oral work, computer codes/programs, artistic or architectural works, scientific projects, performances, web page designs, graphical representations, diagrams, videos, and images. Use RefWorks to keep track of your research and edit and format bibliographies in the citation style required by the instructor (<http://www.library.dal.ca/How/RefWorks>)
- Do not download the work of another from the Internet and submit it as your own.
- Do not submit work that has been completed through collaboration or previously submitted for another assignment without permission from your instructor.
- Do not write an examination or test for someone else.
- Do not falsify data or lab results.

These examples should be considered only as a guide and not an exhaustive list.

What will happen if an allegation of an academic offence is made against you?

I am required to report a suspected offence. The full process is outlined in the Discipline flow chart, which can be found at: <http://academicintegrity.dal.ca/Files/AcademicDisciplineProcess.pdf> and includes the following:

1. Each Faculty has an Academic Integrity Officer (AIO) who receives allegations from instructors.
2. The AIO decides whether to proceed with the allegation and you will be notified of the process.
3. If the case proceeds, you will receive an INC (incomplete) grade until the matter is resolved.
4. If you are found guilty of an academic offence, a penalty will be assigned ranging from a warning to a suspension or expulsion from the University and can include a notation on your transcript, failure of the assignment or failure of the course. All penalties are academic in nature.

Where can you turn for help?

- If you are ever unsure about ANYTHING, contact myself.
- The Academic Integrity website (<http://academicintegrity.dal.ca>) has links to policies, definitions, online tutorials, tips on citing and paraphrasing.
- The Writing Center provides assistance with proofreading, writing styles, citations.
- Dalhousie Libraries have workshops, online tutorials, citation guides, Assignment Calculator, RefWorks, etc.
- The Dalhousie Student Advocacy Service assists students with academic appeals and student discipline procedures.
- The Senate Office provides links to a list of Academic Integrity Officers, discipline flow chart, and Senate Discipline Committee.