CSC310 Information Theory, Fall 2005 – Info Sheet

September 6, 2005
www.cs.toronto.edu/∼roweis/csc310/

- Instructor: Prof. Sam Roweis
  Lectures: Mondays, Wednesdays 9:10-10:00AM, BA 1220
  First lecture September 12, last lecture December 2.
  Tutor: Darius Braziunas
  Tutorials: Thursdays 9:10-10:00AM, BA1220
  Office hours: Wednesdays 10-11AM, LP290F
  website: www.cs.toronto.edu/∼roweis/csc310/
  email: csc310@cs.toronto.edu
  (please do *not* send Roweis or Braziunas email about the class directly to their personal accounts)

- Marking Scheme:

  - 2 small assignments worth 8% each
  - 2 larger assignments worth 17% each
  - 1 midterm test and 1 final test worth 25% each
  - NO FINAL EXAM

  Prerequisite: one of CSC207H1/CSC260H1/270H1; one of STA247H1/STA255H1/STA257H1;
  one of MAT223H1/MAT240H1 but instructor permission can waive these;
  Load: 26L, 13T
  Auditing policy: permitted with instructor permission

- Course Description:
  The course is an introduction to information theory which is the basis of all modern methods for digital communication and data compression. Measuring information. The source coding theorem. Data compression using ad hoc methods and dictionary-based methods. Probabilistic source models, and their use via Huffman and arithmetic coding. Noisy channels and the channel coding theorem. Error correcting codes, and their decoding by algebraic and probabilistic methods.

- Computing:
  CDF accounts will be created for all students. The assignments will involve implementing some algorithms in any computer programming language of the student's choice, although some code will be provided in either C or Matlab.

- Textbook:

  - *Information Theory, Inference and Learning Algorithms*, David MacKay
  - We will be covering material from Parts I, II, III.
  - The bookstore has a few copies, plus the book is freely available online at
    http://www.inference.phy.cam.ac.uk/mackay/itila/book.html.