DATA 5000: Introduction to Data Science

Carleton University, Ottawa, Canada

Course outline: The course covers topics relevant to data science: working with data, exploratory data analysis, data mining, machine learning. The concepts are illustrated using the R language. Students also receive introduction to IBM Cognos Workspace, IBM Watson Analytics and IBM SPSS Modeler. Students will be evaluated by their course projects.

Lectures: Mondays from 8:35 to 11:25 in SA 311/SA 505

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Marking: Students will work on projects in teams of 2. Teams with both members from the same departments will not be allowed.

- 10% Project proposal
- 10% Presentation outline
- 30% Presentation in class
- 50% Project paper

Resources: The following books are suggested but not required.

- *Doing Data Science: Straight Talk From the Frontline*,
  by Cathy O'Neil and Rachel Schutt, O'Reilly Media, 2013.
- *Data Mining and Business Analytics with R*,
  by Johannes Ledolter, Wiley, 2013.
- *Data Science for Business: what you need to know about data mining and data-analytic thinking*,
  by Foster Provost and Tom Fawcett, O'Reilly Media, 2013.

The following books are good references for data mining and machine learning algorithms

- *An Introduction to Statistical Learning: with Applications in R*,
  by Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani, Springer,

2013.

- *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*, by Trevor Hastie, Robert Tibshirani and Jerome Friedman, Springer, 2011.

The following are good references for R (just to name a few)

- *Cookbook for R* by Winston Chang.
- *The R Inferno* by Patrick Burns.
- *Quick-R*.
- *Software for Data Analysis Programming with R*, by John Chambers, Springer, 2008.

University Policies:

Academic Integrity

Academic Integrity is everyoneâ€™s business because academic dishonesty affects the quality of every Carleton degree. Each year students are caught in violation of academic integrity and found guilty of plagiarism and cheating. In many instances they could have avoided failing an assignment or a course simply by learning the proper rules of citation. See the academic integrity for more information.

Academic Accommodations for Students with Disabilities

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Religious Obligation

Write to the instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website.
