Engineering Decision Theory
EN5830

Chathuranga Weeraddana

September 2019

Lecture 1: Overview

Course Information

- Lecturers: Prathapasinghe Dharmawansa and Chathuranga Weeraddanana
- Lectures: in weekends, 4 hours/week, $14 - 15$ weeks
- Office Hours: weekends + weekdays (with appointments)
- Key Content: vectors and matrix algebra (1/3 of total time), probability and statistics (1/3), mathematical optimization (1/3)

Course Information

- Course Website: moodle of UoM
- Textbooks:
  - indicated in the lecture notes/slides whenever necessary
- Evaluation of Performance:
  - assignments, quizzes, mid examination: **40±20%**
  - final examination: **60±20%**

What is the Relevance of the Module

- used in many different fields, e.g.,
  - engineering
  - inventory control
  - transportation
  - economics
  - marketing
  - artificial intelligence
  - machine learning

Things Necessary

- we go over (first phase of the lectures) the essential elements of
  - vectors and matrices (linear algebra topics)

  which act as the basis for the rest of the topics of the module
- i.e.,
  - topics under probability of statistics
  - topics under mathematical optimization

Key Reference Books

- K. Binmore and J. Davies, Calculus, Cambridge University Press, 2012 [Binmore-2012]
- S. Boyd and L Vandenberghe, Introduction to Applied Linear Algebra Vectors, Matrices, and Least Squares, Cambridge University Press, 2018, [Boyd-2018]
- C. D. Mayer, Matrix Analysis and Applied Linear Algebra, SIAM, 2000, [Mayer-2000]
- G. C. Calafiore and L. E. Ghaoui, Optimization Models, Cambridge University Press, 2014, [Calafiore-2014]
- E. K. P. Chong and H. Stanislaw, An Introduction to Optimization, A John Wiley & Sons, Inc., Publication, 2013, [Chong-2013]
- S. Boyd and L. Vandenberghe, Convex Optimization. Cambridge, U.K.: Cambridge Univ. Press, 2004, [Boyd-2004]
- R Hammack, Book of Proof, 2009, [Hammack-2009]
- there can be some more