Course Announcement

EECS 398

Information Science

Winter 2016

Instructor: Clayton Scott (clayscot@umich.edu)
Prerequisites: Math 116 and (Engineering 101 or equivalent)
Textbook: Information Science by David Luenberger
Meeting time: MW 9-10:30 and F 9:30-10:30 on North Campus

Content: This course will examine the basic mathematical theory of information, and apply that theory to understand several modern technologies for information processing and analysis.

Projected Syllabus:

- 4-5 weeks: Essentials of Shannon’s information theory, including entropy, data compression, transmission over noisy channels, and error correcting codes
- 2-3 weeks: Encryption, from historical ciphers to modern cryptosystems
- 3-4 weeks: Extracting information from data: information retrieval and machine learning
- 3-4 weeks: Frequency concepts: Fourier analysis, AM and FM radio, sampling and reconstruction, spectrum spreading, and digital signal processing

Grading: weekly homework and in-class assignments, two exams, and an open-ended final project.

This 4 credit course has been approved as a flexible technical elective for the CS-Eng, DS-Eng, and EE majors, and an EECS elective for the CE degree. For other majors, consult your academic advisor.

\[ H[p] = -\sum_{i=1}^{k} p_i \log p_i \]