

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

School of Computer and Communication Sciences

Handout 1
General Course Information

Information Theory and Coding
Sep. 15, 2014

Information Theory and Coding

Time and location:

Mondays, 13–15, ELA 1 (lecture)
Tuesdays, 13–15, ELA 2 (lecture)
Tuesdays, 15–17, ELA 2 (exercise)

Instructor:

Emre Telatar (INR 117, 37693, emre.telatar@epfl.ch)
Office hours: by appointment.

Teaching assistants:

Rajai Nasser (INR 036, rajai.nasser@epfl.ch)
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Administrative assistant:

Françoise Behn, (INR 133, 37662, francoise.behn@epfl.ch)

Prerequisite:

Probability and Statistics (I and II) or
Stochastic processes for communications

Web page: <http://ipg.epfl.ch/>

Textbook:

T. M. Cover and J. A. Thomas, *Elements of Information Theory*, Wiley, 2006

Course mechanics:

Weekly assignments, (two of the weeks will be graded; 10%)
Midterm quiz (Tuesday October 28, 40%),
Final exam during finals period (50%).

Approximate Outline:

Properties of information measures (4–5 lectures)
Source coding (7–8 lectures)
Capacity and the channel coding theorem (5–6 lectures)
Coding techniques for reliable communication (4–5 lectures)
Multi-user channels (4–5 lectures)
Additional topics (1–2 lectures)

Reference Material:

1. R. G. Gallager, *Information Theory and Reliable Communication*, Wiley, 1968.
2. C. E. Shannon (with W. Weaver) *The Mathematical Theory of Communication*, U. of Illinois Press, 1963. (see also the course webpage)
3. J. M. Wozencraft and I. M. Jacobs, *Principles of Communication Engineering*, Wiley 1965 (also, Waveland, 1990).