

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:

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Teaching Assistants:

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Pre-requisites:

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
One graded homework (date TBA, 10%)
Midterm Quiz (Tuesday 30 October, 13:15-16:00 pm, Location: AAC 2 31, 40%)
Final Exam (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).