

# ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

School of Computer and Communication Sciences

## Handout 1

General Course Information

Information Theory and Coding

Sep. 19, 2017

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## 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](mailto:emre.telatar@epfl.ch))  
Office hours: by appointment.

### Teaching assistants:

Elie Najm (INR 141, [elie.najm@epfl.ch](mailto:elie.najm@epfl.ch))  
Aleksi Triastcyn (INR 238, [aleksei.triastcyn@epfl.ch](mailto:aleksei.triastcyn@epfl.ch))  
Pierre Quinton ([pierre.quinton@epfl.ch](mailto:pierre.quinton@epfl.ch))

### Administrative assistant:

Muriel Bardet, (INR 137, 37695, [muriel.bardet@epfl.ch](mailto:muriel.bardet@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,  
One graded homework (date TBA, 10%),  
Midterm quiz (Tuesday October 31, 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).