

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE
School of Computer and Communication Sciences

Handout 1
General Course Information

Information Theory and Coding
Sep. 9, 2024

Information Theory and Coding

Time and Location:

Mondays, 11h15–13h, BC 01 (lecture)
Tuesdays, 13h15–15h, ELA 2 (lecture)
Tuesdays, 15h15–17h, ELA 2 (exercise)

Instructor:

Emre Telatar (INR 117, emre.telatar@epfl.ch)
Office Hours: By appointment

Teaching Assistants:

Adway Girish (INR 139, adway.girish@epfl.ch)
Adrien Vandenbroucq (INR 033, adrien.vandenbroucq@epfl.ch)
Office Hours: By appointment

Administrative Assistant:

Muriel Bardet (INR 137, muriel.bardet@epfl.ch)

Prerequisites:

Probability and Statistics (I and II) or Stochastic Processes for Communications

Webpage: <http://ipg.epfl.ch> > Teaching > 2024-25 > Information Theory and Coding

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

Course Mechanics:

Weekly exercises (ungraded)
One graded homework (date TBA, 10%)
Midterm Exam (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)

Additional 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).