

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

School of Computer and Communication Sciences

Handout 1
General Course Information

Advanced Digital Communications
Sep. 24, 2010

Advanced Digital Communications

Time and location:

Mondays, 8–10, INM 10 (lecture)
Mondays, 10–12, INM 10 (exercise)
Fridays, 13–15, INM 10 (lecture)

Instructor:

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

Teaching assistants:

Emre Atsan (BC 047, emre.atsan@epfl.ch)
Lorenzo Keller (BC 046, lorenzo.keller@epfl.ch)
Alla Merzakreeva (INR 036, alla.merzakreeva@epfl.ch)

Administrative assistant:

Yvonne Huskie, (INR 133, 37694, yvonne.huskie@epfl.ch)

Prerequisite:

Principles of Digital Communications

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

Textbook:

Upamanyu Madhow's *Fundamentals of Digital Communication*, (Cambridge University Press, 2008) has a large overlap with the material covered in the course.

Course mechanics:

Weekly assignments (10%),
Midterm quiz (40%),
Final exam during finals period (50%).

(Very) Approximate Outline:

Review of Principles of Digital Communication
Intersymbol Interference Channels
Viterbi and BCJR algorithms
Linear Estimation, Equalization
OFDM
Synchronization (?)
Wireless Communication, Multiple Access, Information Theory Connections

Reference Material:

1. J. M. Wozencraft and I. M. Jacobs, *Principles of Communication Engineering*, Wiley, 1965 (also, Waveland, 1990).
2. D. Tse and P. Viswanath, *Fundamentals of Wireless Communication*, Cambridge, 2004.
3. J. Proakis, *Digital Communications*, McGraw-Hill, 2000.
4. J. Chioffi, Lecture Notes for EE379 at Stanford University (available online).
5. G. D. Forney, Jr., Lecture Notes for 6.451 at MIT. (available online).
6. S. Diggavi, Lecture Notes for Advanced Digital Communications at EPFL. (available on course website).
7. B. Rimoldi, Lecture Notes for Principles of Digital Communications at EPFL. (available on course website).