

# ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

School of Computer and Communication Sciences

## Handout 1

General Course Information

Advanced Digital Communications

Sep. 14, 2009

---

## 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](mailto:Emre.Telatar@epfl.ch))

Office hours: by appointment.

### Teaching assistants:

Mohammad Karzand (INR 037, 35644, [Mohammad.Karzand@epfl.ch](mailto:Mohammad.Karzand@epfl.ch))

Vojislav Gajic (INR 031, 33147, [Vojislav.Gajic@epfl.ch](mailto:Vojislav.Gajic@epfl.ch))

Florence Bénézit (BC 322, 35636, [Florence.Benezit@epfl.ch](mailto:Florence.Benezit@epfl.ch))

### Administrative assistant:

Yvonne Huskie, (INR 133, 37694, [Yvonne.Huskie@epfl.ch](mailto: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

Linear Estimation, Equalization

Viterbi and BCJR algorithms

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).