
Course Information

Instructor

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Teaching Assistants

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Important Dates

Midterm Exam: Wednesday, November 7, 10:15-12:00, INM 10
Final Exam: To be announced (scheduled by the Service Academique).

Class Times and Locations

Monday, 10:15 - 12:00, BM 1111
Wednesday, 10:15 - 12:00, INM 10

Exercise session: Wednesday, 13:15 - 15:00, INM 10

Course Web Page

<http://ipgwww.epfl.ch/doku.php?id=en:courses:2007-2008:adc>. You can reach the web page easily by navigating from ipg.epfl.ch. Check the contents of this homepage frequently.

Goal

The goal of this class is to introduce signal processing applications in communication systems. This is done by understanding the design of transmitters and receivers in both wireline and wireless communication systems. This class builds on the pre-requisite Principles of Digital Communications, taught in the summer semester.

What to Expect

While aiming at communication engineering targets, the approach is fairly mathematical. Hopefully you will appreciate the way it all works out. However, if you have difficulties, talk to us sooner rather than later. Do not fall behind!

How You Can Help Yourself

Do the homework, ask questions, be proactive. Before class spend a few minutes to review what you have learned in the previous lecture and browse through the notes to be prepared on what will come next. Check the web to find out what we will do next. After class ask yourself if you understood and how can you be better prepared next time. We urge you, when you finish an exercise, to spend some time thinking about what it means, how the solution technique might be extended to more general problems, whether the model used in the exercise makes sense physically, etc.

Homeworks

Homework assignments will be given out once every two weeks. However, new problems will be added weekly. Homework sets will be made available on the web on Tuesdays and questions will be answered during the exercise sessions on Wednesdays. You get most out of the homework if you make a reasonable effort to solve it on your own and come at the exercise session with questions. Check frequently the homeworks web page for the newly added problems and for the due date. We will choose randomly one problem from the homework set and grade it. Your homework grade will be based on this chosen problem. Solutions (sometimes might not be complete solutions) will be posted on the web.

Exams

There will be a midterm exam in class and a final exam during the scheduled final exam period. The midterm exam will be on the 7th of November, and the final exam will be scheduled by the Service Academique.

Grading

Homework 10%, Midterm exam 40%, Final exam 50%.

Course Content

A brief outline of the course is given in the course catalog description file, which can be found on the class web page, under the “General” section.

Prerequisites

Apart from standard math courses, you will need what you have learned in Processus stochastiques pour les communications and Principles of Digital Communications.

Recommended Texts

1. D. Tse and P. Viswanath, Fundamentals of Wireless Communication, 2004
2. S. Benedetto and E. Biglieri, Principles of Digital Transmission with Wireless Applications
3. E. Biglieri, Coding for Wireless Channels, 2006
4. A. Goldsmith, Wireless Communications, 2005
5. E. Lee and D. Messerschmitt, Digital Communication
6. J. Proakis, Digital Communications.