



UNIVERSITÀ DI PISA  
**DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE**  
**Dottorato di Ricerca in Ingegneria dell'Informazione**

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Doctoral Course

**“Resource allocation algorithms for advanced wireless communication systems”**

Prof. Marco Moretti

*Università di Pisa - Italy*

**Short Abstract:** The course covers the most important resource allocation algorithms for multicarrier radio systems with the goal to illustrate the main techniques and show what are the leading mathematical tools employed to solve the allocation problems.

**Course Contents in brief:**

Depending on the technical skills of the audience the structure of the course could slightly change its organization. A tentative syllabus is the following:

- 1. Introduction to multicarrier systems and convex optimization.
- 2. Single-user allocation.
- 3. Orthogonal multi-user allocation.
- 4. Multi-user allocation with interference.
  - Resource allocation for MIMO systems: broadcast and interference channel.
  - Resource allocation algorithms for D2D, FD and NOMA systems.
- 5. Multi-cell allocation: static and dynamic algorithms. Distributed and centralized algorithms.

**Total # of hours of lecture:** 16 hours

**CV of the Teacher**

Marco Moretti is since 2006 with the Department of Ingegneria dell'Informazione of the Università di Pisa, where he currently holds the Associate Professor position. His research interests are in wireless communication theory, with emphasis on synchronization, channel estimation and resource allocation for multi-carrier systems. He has published more than 30 journal papers, several conference papers, 2 book chapters and holds four patents. He is editor of IEEE Transactions on Signal Processing. He has held teaching positions at the Columbia University in the City of New York (USA) and at Xidian University (China).

**Room and Schedule**

Room: *Aula Riunioni del Dipartimento di Ingegneria dell'Informazione, Via G. Caruso 16, Pisa.*

Schedule:

Day 1 - 15 June 2020 - 14:00 – 18:00,

Day 2 - 16 June 2020 - 14:00 – 18:00,

Day 3 - 17 June 2020 - 14:00 - 18:00,

Day 4 - 18 June 2020 - 14:00 - 18:00.