

Wireless Communications

Object: This course introduces you the fundamental aspects of wireless communications, which may help you understand and further tackle the issues in designing the robust mobile communication systems. The included projects help you learn by doing and find it interesting.

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Textbook: listed as followed,

- *Wireless Communications: Principles and Practice* by Theodore S. Rappaport, Prentice Hall, 2002.
- *Quadrature Amplitude Modulation: From Basics to Adaptive Trellis-Coded, Turbo-Equalised and Space-Time Coded OFDM, CDMA and MC-CDMA Systems* by Lajos Hanzo, Soon Xin Ng, Thomas Keller, and William Webb, Wiley-IEEE Press, 2004.
- *OFDM and MC-CDMA for Broadband Multi-User Communications, WLANs and Broadcasting* by Lajos Hanzo, M. Mnster, B. J. Choi, and Thomas Keller, Wiley-IEEE Press, 2003.

Grading: midterm project 50%, final project 50%.

Lectures:

- Evolution of Wireless Broadband
- The Cellular Concept, Cellular System Design Fundamentals
- Antennas, Propagation, Fundamentals - large/small scale propagation model
- Digital Modulation
- Spread Spectrum
- Diversity, Equalization
- OFDM
- Basic multiple access techniques
- Multi-Input Multi-Output Communications Systems