

EC 4910: Digital Signal Processing for Wireless Communications (3-2)

POC: Roberto Cristi, Professor, Code EC/Cx, tel 2223, rcristi@nps.edu

Prerequisites. EC3410 or EC3500

Reference Text (optional):

R. Van Nee and R. Prasad, *OFDM for Wireless Multimedia Communications*, Artech House, 2000, ISBN 0-89006-530-6

Course Description

1. Digital Communications fundamentals
2. Multirate Digital Signal Processing: upsampling, downsampling operations on signals;
3. Efficient Implementation of Multirate Systems: multistage implementation and polyphase decomposition;
4. Transmultiplexers;
5. Wireless Channels: the Wide Sense Stationary Uncorrelated Scattering (WSSUS) Model, Time Coherence, Frequency Coherence;
6. Multi Carrier Modulation and Orthogonal Frequency Division Multiplexing (OFDM): principles;
7. OFDM applications to IEEE 801.11a/g and IEEE 802.16 standards;
8. Time and Frequency Synchronization in OFDM Systems;
9. MIMO OFDM.

Requirements:

- 8 Computer Projects in Simulink and Matlab