

# EE 670 Wireless Communications

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<b>1. Wireless Communications and Diversity</b>
A. Wireless Channel Modeling
B. Path loss, Shadowing
C. Fast Fading
D. Rayleigh/Ricean Fading Channels
E. BER Performance
<b>2. Diversity in Wireless Systems</b>
A. Antenna Diversity (MRC)
B. BER Performance with diversity
C. Types of Diversity
<b>3. Wireless Channel Modeling</b>
A. WSSUS Channel Modeling
B. RMS Delay Spread
C. Doppler Fading
D. Jakes Model, Autocorrelation
E. Jakes Spectrum
F. Impact of Doppler Fading
<b>4. CDMA</b>
A. Introduction to CDMA
B. Walsh codes, Variable tree OVVSF
C. PN Sequences
D. Multipath diversity, RAKE Receiver
E. CDMA Receiver Synchronization
<b>5. MIMO</b>
A. Introduction to MIMO
B. MIMO Channel Capacity
C. SVD and Eigenmodes of the MIMO Channel
D. MIMO Spatial Multiplexing – BLAST
E. MIMO Diversity – Alamouti, OSTBC
F. MIMO Beamforming – MRT
G. MIMO - OFDM
<b>6. OFDM</b>
A. Introduction to OFDM
B. Multicarrier Modulation and Cyclic Prefix
C. Channel model and SNR performance
D. OFDM Issues – PAPR
E. Frequency Offset