University of Pretoria Yearbook 2016

Digital communication 310 (EDC 310)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
Programmes	BEng Computer Engineering
	BEng Computer Engineering Engage
Prerequisites	ELI 220 GS
Contact time	1 tutorial per week, 1 practical per week, 3 lectures per week
Language of tuition	Both Afr and Eng
Academic organisation	Electrical, Electronic and Com
Period of presentation	Semester 2

Module content

Basic Signals Theory, Transform theory (Fourier, Laplace and Z-transform) and Linear Systems. Overview of stochastic processes: Stationarity and ergodicity. Noise and channel models. Transmission effects. Definition of information and coding of analog information sources. Shannon’s Channel Capacity Theorem. Introduction to channel (error) detection and correction coding: Block and Convolutional coding. Maximum-likelihood sequence decoding: The Viterbi algorithm. Analysis of digital modulation techniques in AWGN. Optimal Receiver design. Nyquist and Partial-Response systems. Power Spectral Density (PSD) of random data signals. Digital Transmission through band-limited channels: ISI, Nyquist criteria and equalizers. Data communication standards and protocols. The focus will be on applications in the computer and network environments.

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