

University of Pretoria Yearbook 2022

DSP programming and application 411 (ESP 411)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
NQF Level	08
Programmes	BEng (Computer Engineering) BEng (Computer Engineering) ENGAGE BEng (Electronic Engineering) BEng (Electronic Engineering) ENGAGE
Prerequisites	ESC 320 GS or EDC 310 GS
Contact time	1 practical per week, 1 tutorial per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Electrical, Electronic and Computer Engineering
Period of presentation	Semester 1

Module content

This module addresses basic principles of DSP (basic DSP system architecture and properties, analogue interfaces), discrete transforms (Fourier series, Discrete Fourier-Transform (DFT), Fast Fourier-Transform (FFT) and Z-transform), correlation and convolution (correlation, convolution, properties and applications, DSP implementation), digital filters (design framework, FIR and IIR filter design, introduction to adaptive filters), DSP hardware (computer architecture and DSP processors, mapping of DSP algorithms onto DSP hardware), real-world applications and design studies, and simulation (in C) and real-time implementation of selected signal processing algorithms on DSP hardware.

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