

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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