Digital radio techniques 732 (ESR 732)

Qualification	Postgraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	32.00
NQF Level	08
Prerequisites	ETD 732
Contact time	32 contact hours per semester
Language of tuition	Module is presented in English
Department	Electrical, Electronic and Computer Engineering
Period of presentation	Semester 1 or Semester 2

Module content

Analog vs digital radio techniques, review of baseband and bandpass sampling concepts, overview of DSP-principles, Z-Transform and digital filter design, digital modulation techniques and performance analysis, radio link power analysis and design, generic radio configurations, low noise amplifier and radio front-end design, high-speed A/D and D/A components and design, automatic gain (power) control, direct versus superheterodine downconversion methods, IF-sampling techniques, digital radio receiver design, analog vs digital (carrier and symbol) synchronisation methods, doppler tracking, analysis and design of diversity techniques, multiple-input/multiple output (multi antenna element) systems, space-time coding, modular embedded system design and rapid prototyping (RF, CMOS and FPGA implementation techniques and technologies), computer-aided design software, tools and techniques.

General Academic Regulations and Student Rules
The General Academic Regulations (G Regulations) and General Student Rules apply to all faculties and registered students of the University, as well as all prospective students who have accepted an offer of a place at the University of Pretoria. On registering for a programme, the student bears the responsibility of ensuring that they familiarise themselves with the General Academic Regulations applicable to their registration, as well as the relevant faculty-specific and programme-specific regulations and information as stipulated in the relevant yearbook. Ignorance concerning these regulations will not be accepted as an excuse for any transgression, or basis for an exception to any of the aforementioned regulations. The G Regulations are updated annually and may be amended after the publication of this information.

Regulations, degree requirements and information
The faculty regulations, information on and requirements for the degrees published here are subject to change and may be amended after the publication of this information.

University of Pretoria Programme Qualification Mix (PQM) verification project

The higher education sector has undergone an extensive alignment to the Higher Education Qualification Sub-Framework (HEQSF) across all institutions in South Africa. In order to comply with the HEQSF, all institutions are legally required to participate in a national initiative led by regulatory bodies such as the Department of Higher Education and Training (DHET), the Council on Higher Education (CHE), and the South African Qualifications Authority (SAQA). The University of Pretoria is presently engaged in an ongoing effort to align its qualifications and programmes with the HEQSF criteria. Current and prospective students should take note that changes to UP qualification and programme names, may occur as a result of the HEQSF initiative. Students are advised to contact their faculties if they have any questions.