



University of Pretoria Yearbook 2023

Microwaves and antennas 320 (EMZ 320)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
NQF Level	07
Programmes	BEng (Electronic Engineering) BEng (Electronic Engineering) ENGAGE
Prerequisites	EMZ 310 GS, ENE 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 2

Module content

This module covers waveguides and transmission lines (parallel plate, TE and TM waveguide modes, propagation velocity, resonant cavities, coaxial line, stripline, microstrip line, dispersion, transients), network analysis (S-parameters, signal flow diagrams, filter implementation, Richard's transformation, Kuroda's identities, Smith charts, matching networks, power divider), antenna fundamentals (port and radiation characteristics, Hertzian dipole, dipole antennas, patch antennas), antenna systems (effective area, Friis transmission formula, radar range equation), uniform linear arrays, and antenna applications.

Regulations and rules

The regulations and rules for the degrees published here are subject to change and may be amended after the publication of this information.

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.



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 (HEQF) 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.