University of Pretoria Yearbook 2017

Radiation physics and radiation protection 700 (SFR 700)

Qualification	Postgraduate
Faculty	Faculty of Health Sciences
Module credits	15.00
Programmes	BRadHons Radiation Therapy
Prerequisites	No prerequisites.
Contact time	1 discussion class per week
Language of tuition	Module is presented in English
Academic organisation	Radiography
Period of presentation	Year

Module content

Basic radiation physics. Interactions of X-radiation and gamma rays with matter. Radiation beam attenuation. Treatment machines for external beam radiotherapy. External photon beam and dose quantities. Photon beam measurements and calibrations and treatment dose calculations. Photon beam modification for treatment dose optimisation. Electron interaction with matter and electron therapy. Radiotherapy quality assurance of external beam units and treatment planning systems. Radiation protection and shielding and personnel monitoring. Imaging in radiation oncology. Radiation physics principles of three dimensional conformal radiation therapy and intensity modulated radiation therapy. Procedures and processes involved in Stereotactic radiotherapy and stereotactic radiosurgery. Radiation physics principles of Brachytherapy. Principles of total body irradiation. Radiation interactions in proton and neutron therapy,