

# University of Pretoria Yearbook 2019

## Radiation physics 310 (RFI 310)

<b>Qualification</b>	Undergraduate
<b>Faculty</b>	<a href="#">Faculty of Natural and Agricultural Sciences</a>
<b>Module credits</b>	10.00
<b>Programmes</b>	<a href="#">BRad Diagnostics</a>
<b>Service modules</b>	Faculty of Health Sciences
<b>Prerequisites</b>	FSG 251, RFI 210, RAW 281, RBG 281, RAN 280, RAW 282, FSG 252, FSG 262, RAW 284 and RFI 211
<b>Contact time</b>	3 lectures per week
<b>Language of tuition</b>	Module is presented in Afrikaans
<b>Department</b>	Physics
<b>Period of presentation</b>	Semester 1

### Module content

Computed tomography: CT generations. Equipment: x-ray tube, collimators, detectors. Image reconstruction: fundamental equations, algorithms.

Image properties: field size, image matrix, voxel, pixel, CT number, window width and height. Image quality: spatial resolution, contrast resolution, quantum mottle, spatial uniformity and frequency. Image processing: edge enhancement, pixel shifting and subtraction. Digital radiography: X-ray, equipment, analogue to digital conversion, linear and logarithmic subtraction, image noise. Ultrasound: theory, transducers, piezo-electric crystals, resonant frequency, interaction with matter, acoustic impedance, Doppler techniques. Magnetic resonance: medical applications.

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