

University of Pretoria Yearbook 2022

Radiation physics 310 (RFI 310)

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| Qualification | Undergraduate |
| Faculty | Faculty of Natural and Agricultural Sciences |
| Module credits | 10.00 |
| NQF Level | 07 |
| Service modules | Faculty of Health Sciences |
| Prerequisites | FSG 251, RFI 210, RAW 281, RBG 281, RAN 280, RAW 282, FSG 252, FSG 262, RAW 284 and RFI 211 |
| Language of tuition | Module is presented in English |
| Department | Physics |
| Period of presentation | 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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