

General Course Information

MDPH403 Radiation Physics

0.125 EFTS

First Semester

19 February 2024 – 23 June 2024

Course Coordinator

Dr Konstantin Pavlov

Office location/hours: JVH726 / Mon 11-12, Tue 4-5, additional meetings - by arrangement

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Lectures (check Timetable for possible changes)

Monday 10:00-11:00

Tuesday 15:00-16:00

Wednesday 16:00-17:00

Description

The aim of the course is to provide participants with a general knowledge of the physical principles that form the foundations for the use of ionising radiation primarily in medicine (both therapy and diagnostic), and, to a lesser degree, in industry.

Assessment

10% Quiz 1

20% Mid-term test

10% Quiz 2

60% Final exam

NB: A pass in the final exam is required to pass the course.

Textbooks

Required Textbook:

- Podgorsak EB (2016), *Radiation Physics for Medical Physicists* 3rd ed, Springer (ebook)

Additional resources:

- Johns HE & Cunningham JR (1983, 1987), *The Physics of Radiology* 4th ed, Thomas (ebook)
- Podgorsak EB (Ed) (2005), *Radiation Oncology Physics: A Handbook for Teachers and Students*, IAEA (ebook)

- Khan FM (2014), *The Physics of Radiation Therapy* 5th ed, Lippincott Williams & Wilkins (ebook)
- Attix FH (1986), *Introduction to Radiological Physics and Radiation Dosimetry*, John Wiley & Sons (ebook)

Objectives

To provide a general understanding, and a basic knowledge of

- the types, origins and sources of ionising radiation and its interaction with matter
- the basics of ionising radiation dosimetry
- the principles involved in the detection and measurement of ionising radiation

Summary of Course Content

The topic areas covered are

- basic nuclear physics
- radioactivity
- charged ionising radiation
- uncharged ionising radiation
- neutrons
- dosimetric principles, quantities and units, and dosimetry in practice
- x-ray production

All important course information will be accessible through the UC *Learn* system available at <http://learn.canterbury.ac.nz/>. You need to login with your UC login and password and then select the appropriate course code. Make sure you check the *Learn* page regularly for relevant information and course updates. Note that all course related emails will be sent to your UC email address. No other email addresses will be accepted. It is your responsibility to check your UC email regularly.

General Physics and Astronomy Information

Please consult the document General Information for Physics and Astronomy Students:

<https://apps.canterbury.ac.nz/1/science/phys-chem/PHYS%20-%20Course%20Outlines/General.PDF>