Module Specification

Radiation Physics in Practice

Version: 2026-27, v1.0, 27 Feb 2025

Contents

Part 1: Information

Module title: Radiation Physics in Practice

Module code: USSYQW-60-3

Level: Level 6

For implementation from: 2026-27

UWE credit rating: 60

ECTS credit rating: 30

College: College of Health, Science & Society

School: CHSS School of Applied Sciences

Partner institutions: None

Field: Applied Sciences

Module type: Module

Pre-requisites: Applied Medical Physics 2026-27

Excluded combinations: None

Co-requisites: None

Continuing professional development: Yes

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module builds upon the theory that the apprentices have already studied in the first and second year (modules listed in the requirements tab) by looking at the practical application of radiation physics within healthcare.

Pre-requisites: Students must have passed USSYQL-60-2 Applied Medical Physics before starting this module.

Features: This module is available as CPD.

Educational aims: This module encourages apprentices to extend their theoretical knowledge of radiation physics and to apply this to the workplace.
Apprentices consider how radiation can be used safely and legally within healthcare and how image quality and patient dose can be optimised.

Outline syllabus: The indicative syllabus of the module is as follows:

Further study (building on previous years) of the interactions of clinical sources of ionising and non-ionising radiation with tissue and the associated risks. This will include studying a range of approaches to patient dosimetry and optimisation of patient doses.

Staff and patient dose surveys, including choice of appropriate monitoring equipment.

Implementation of the current legislation and national and international sources of guidance on the clinical use of radiation.

Practical aspects of ionising and non-ionising radiation protection.

Design of diagnostic imaging installations including shielding, engineering controls and the critical examination.

Quality management systems in radiology, including calibration and quality control of equipment.

Safe use of radioactive sources in diagnosis and therapy including contingency plans for reasonably foreseeable incidents.

Part 3: Teaching and learning methods

Teaching and learning methods: This module uses a blended approach of on-campus practical work and discussions together with online seminars for which

apprentices are given guided reading/viewing as preparation and consolidation work. Apprentices are also expected to draw upon their experience in the workplace.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Critically evaluate models used to describe the risks associated with ionising and non-ionising radiation with matter.

MO2 Evaluate the organisational arrangements for radiation protection in hospitals and other healthcare settings including the requirements of current legislation.

MO3 Evaluate how radiation doses can be controlled in clinical settings including room design and the role of patient and staff dose surveys.

MO4 Demonstrate understanding of the principles supporting the selection of appropriate equipment for quality control tests, contamination monitoring and dosimetry measurements.

MO5 Evaluate the safe use of radioactive materials in the clinical environment.

MO6 Demonstrate the use of quality systems to assess and optimise the performance of equipment.

Hours to be allocated: 600

Contact hours:

Independent study/self-guided study = 200 hours

Face-to-face learning = 80 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ussyqw-60-3.html

Part 4: Assessment

Assessment strategy: Assessment 1: Portfolio (1500 words or equivalent per piece of graded evidence)

This assessment comprises a portfolio of evidence collated from the workplace. Two components will be assessed to give a grade. These will be an oral case-based discussion on control of radiation doses and a write up of quality control tests on a piece of radiology equipment carried out by the apprentice. The remaining components of the portfolio must be passed, but will not be graded.
This assessment links directly to professional competencies and assesses skills in data analysis, scientific report writing and understanding of key concepts in radiation physics . The requirement for the apprentice to report on testing that they have performed at work will minimise the opportunity for plagiarism. All competencies that are not graded will be assessed by their workplace assessor and UWE lecturers will also look at a number of these and give formative feedback to the apprentices.

Assessment 2: Examination (2 hours)
The examination will assess the apprentices understanding of key concepts that they need to apply in their workplace in order to make on the spot and time critical decisions. The focus will be on safety critical information and on understanding the risks associated with ionising and non-ionising radiation.
Formative support for this assessment takes the form of in-class discussions based on sample questions and online resources . Use will also be made of peer based discussions and feedback.

Assessment tasks:

Portfolio (First Sit)
Description: Portfolio of evidence collated from the workplace.
Weighting: 70 %
Final assessment: No
Group work: No
Learning outcomes tested: MO2, MO3, MO4, MO6

Examination (First Sit)
Description: Examination (2 hours)
Weighting: 30 %
Final assessment: Yes

Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO5

Portfolio (Resit)
Description: Portfolio of evidence collated from the workplace.
Weighting: 70 %
Final assessment: No
Group work: No
Learning outcomes tested: MO2, MO3, MO4, MO6

Examination (Resit)
Description: Examination (2 hours)
Weighting: 30 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO5

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Healthcare Science (Radiation Physics) {Apprenticeship-UWE} [Frenchay] BSc (Hons) 2024-25