



Module Specification

Principles in Healthcare Science

Version: 2023-24, v3.0, 12 Jun 2023

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Part 1: Information

Module title: Principles in Healthcare Science

Module code: USSJT6-30-1

Level: Level 4

For implementation from: 2023-24

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Health & Applied Sciences

Department: HAS Dept of Applied Sciences

Partner institutions: None

Field: Applied Sciences

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module provides the learner with essential knowledge and understanding of principles underpinning work in healthcare science and the regulatory framework in which work takes place.

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: Part I – Scientific Principles

Basic medical imaging science

The structure of the atom, mass number, atomic number, isotopes

The structure of the nucleus, modes of radioactive decay, the ranges and ionisation properties of radioactivity, half-life, inverse square law, units of activity, the biological effects of radiation, dose and dose equivalent

Production of X-rays, CT, ultrasonic imaging, image formation, filtering and image enhancement techniques

Performing calculations

Rearranging formulae, scientific notation, significant figures, powers and indices

Logs and exponentials, trigonometry

Differentiation & integration

Estimating uncertainties

Precision and accuracy, histograms, bar charts, box and whisker plot, mean, mode, standard deviation, variance, IQRs, samples and populations

The normal distribution, 95% confidence limits, combining uncertainties

Informatics

Spreadsheets & graphical techniques

Informatics and clinical practice

Healthcare computer systems & database management

Networking and messaging standards

Part II – Patient Care Principles

The workbased learning content/competencies will be relevant to the role of the individual student within their workplace and be defined by the appropriate learning packages within the:

All pathways - Practitioner Training Programme (PTP) Training Manual

Patient management

To include an understanding of patient presentation, physiological examinations that may be required and an understanding of specific patient needs

and care

Age-specific needs

Disability needs – communication passports

Carer needs

Professional skills

Infection control

Ethics and confidentiality

Health and safety (patient, personal, equipment)

Fitness to practice

Quality, risk and audit

Record keeping

Patient observations/management

Recognising the deteriorating patient and when to intervene

Personal development

Communication and listening skills relevant to effective clinical practice

Awareness of patient needs and rights as an individual to include: Informed consent, Equality rights and diversity, Human dignity/privacy, Patient psychology, cultural differences

Recognise professional responsibilities with respect to children and vulnerable adults

Managing violence and aggression, awareness of triggers and body language

Part 3: Teaching and learning methods

Teaching and learning methods: The strategy of this module is to provide a platform for students to gain an understanding of the underlying principles behind both the scientific and patient care aspects of healthcare.

In order to achieve its main purpose this module therefore uses a variety of teaching and learning methods and approaches.

For Part I (total 150 hours) students are expected to spend 72 hours on scheduled learning and 78 hours on independent learning. Theoretical material within the

module will be presented to the students in the form of regular lectures throughout each of the semesters in the academic year. During those times of work based learning, these lectures will be delivered online and involve a number of technological enhancements. The learning of lecture content will be reinforced through time spent in independent

learning by the directed reading of recommended texts and through the use of technology enhanced learning resources that will be provided online. This online learning and engagement will be delivered through several avenues:

Synchronous online tutorials in protected learning time where the student will contribute/attend an online activity appropriate to the content at the time at which the academic will be present online to facilitate and lead this scheduled/timetabled session. This tutorial will be themed/planned.

Asynchronous discussions in the student's own time (or during protected time where permitted and appropriate) where they will engage/collaborate with other students on the course or in specified groups, and in which the academic is permitted to moderate where necessary, but is not expected to contribute.

Synchronous surgery sessions timetabled for a specific time in which the academic will be available online to answer live questions via discussion boards/blogs/collaborate or to respond to questions posted/asked prior to the session.

Interactive, online formative quizzes made available either following a particular package of knowledge exchange/learning, or in specified sessions/time periods.

Lectures delivered online through a combination of one or more of the following: visual/audio/interactivity/personal formative assessment

For Part II (total 150 hours), professional competencies will be taught through work based training, and assessed in accordance with the

All pathways - PTP Training Manual

Scheduled learning includes lectures, seminars, tutorials, project supervision, demonstration, practical classes and workshops; fieldwork; external visits; work based learning; supervised time in studio/workshop.

Independent learning includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc. These sessions constitute an average time per level as indicated in the table below. Scheduled sessions may vary slightly depending on the module choices you make.

Work based learning: Work based skills will be gained during on the job training which will be based on the appropriate professional competencies. The work-based training will be augmented with blended learning to ensure the student understands the breadth of the application of science within their Healthcare Science Division and can apply that knowledge in practice.

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

MO1 Perform basic scientific calculations relevant to healthcare and the physiological sciences

MO2 Use statistical methods to describe datasets using a variety of techniques

MO3 Apply a basic knowledge of nuclear and atomic physics to describe the basis of instruments, equipment and procedures in nuclear medicine

MO4 Describe the structure, management and legal framework for health and social care services including local healthcare systems in the United Kingdom and funding flows

MO5 Identify and explain the rationale for monitoring and maintaining health, safety and security in the workplace in order to facilitate safe practice

MO6 Reflect on practice which contributes to the identification of health care needs and the delivery of care

MO7 Develop awareness of identified essential health care skills taking into account the multicultural dimension of inter-professional care across the age and disability spectrum

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 78 hours

Placement = 150 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ussjt6-30-1.html) via the following link <https://uwe.rl.talis.com/modules/ussjt6-30-1.html>

Part 4: Assessment

Assessment strategy: Assessment 1: Online Assignments

Online assignments will be embedded in the module. This will enable the Module Leader to monitor progress and marks obtained by apprentices.

Assessment 2: Portfolio

Professional competencies will be assessed in accordance with the 'All pathways - PTP Training Manual'

Example types of evidence which will be collected from may include:

Reflective video logs (vlog) to demonstrate their understanding of their 'hidden career'.

Direct Observation of Practical Skills (DOPS); the observation and evaluation of a procedural/technical or practical skill performed by a student in a live environment.

Case Based Discussions (CBDs) which are designed to provide structured teaching and feedback in a particular area of clinical or technical practice by evaluating decision making and the interpretation and application of evidence. They also enable the discussion of the context, professional, ethical and governance framework of practice, and in all instances, they allow students to discuss why they acted as they did. CBDs are used throughout training and should encourage a reflective approach to learning.

Mini Clinical Examinations (mini-Cex) where relevant.

Formative feedback is available to apprentices throughout the module through group discussions, and in workshops.

Assessment tasks:

Online Assignment (First Sit)

Description: Online assignments

Weighting: 100 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO6, MO7

Portfolio (First Sit)

Description: All pathways – Year 1 PTP Training Manual competencies (Pass/Fail)

Weighting:

Final assessment: Yes

Group work: No

Learning outcomes tested: MO4, MO5, MO6, MO7

Online Assignment (Resit)

Description: Online assignment

Weighting: 100 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO6, MO7

Portfolio (Resit)

Description: All pathways – Year 1 PTP Training Manual competencies (Pass/Fail)

Weighting:

Final assessment: Yes

Group work: No

Learning outcomes tested: MO4, MO5, MO6, MO7

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Healthcare Science (Respiratory & Sleep Physiology) {Apprenticeship-UWE}
[Frenchay] BSc (Hons) 2023-24

Healthcare Science (Radiation Physics) {Apprenticeship-UWE} [Frenchay] BSc
(Hons) 2023-24

Duplicate of Healthcare Science (Cardiac Physiology) {Apprenticeship-UWE}
[Frenchay] BSc (Hons) 2023-24

Healthcare Science (Neurophysiology) {Apprenticeship-UWE} [Frenchay] BSc
(Hons) 2023-24

Healthcare Science (Rehabilitation Engineering) {Apprenticeship-UWE} [Frenchay]
BSc (Hons) 2023-24

Healthcare Science (Radiotherapy Physics) {Apprenticeship-UWE} [Frenchay] BSc
(Hons) 2023-24

Healthcare Science (Radiation Engineering) {Apprenticeship-UWE} [Frenchay] BSc
(Hons) 2023-24

Healthcare Science (Cardiac Physiology) {Apprenticeship-UWE} [Frenchay] BSc
(Hons) 2023-24

Healthcare Science (Renal Technology) {Apprenticeship-UWE} [Frenchay] BSc
(Hons) 2023-24

Healthcare Science (Medical Engineering) {Apprenticeship-UWE} [Frenchay] BSc
(Hons) 2023-24

Healthcare Science (Nuclear Medicine) {Apprenticeship-UWE} [Frenchay] BSc
(Hons) 2023-24

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

Duplicate of Healthcare Science (Cardiac Physiology) {Apprenticeship-UWE}
[Frenchay] BSc (Hons) 2023-24

Healthcare Science (Respiratory & Sleep Physiology) {Apprenticeship-UWE}
[Frenchay] BSc (Hons) 2024-25

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

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

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

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

Duplicate of Healthcare Science (Medical Engineering) {Apprenticeship-UWE}
[Frenchay] BSc (Hons) 2023-24

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

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

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

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