



## **Module Specification**

### **Current Applications of Hybrid Imaging Practice**

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## Part 1: Information

**Module title:** Current Applications of Hybrid Imaging Practice

**Module code:** UZYSQ6-15-M

**Level:** Level 7

**For implementation from:** 2023-24

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Health & Applied Sciences

**Department:** HAS School of Health and Social Wellbeing

**Partner institutions:** None

**Field:** Allied Health Professions

**Module type:** Module

**Pre-requisites:** None

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** Yes

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** Not applicable

**Features:** Not applicable

**Educational aims:** See Learning Outcomes.

**Outline syllabus:** SPECT/CT Equipment Including Safe Working Practice:

An introduction to imaging equipment commonly used with a hybrid imaging

environment (including ancillary equipment)

Common image acquisition and processing techniques

Factors affecting image quality with consideration as to strategies designed to limit/rectify such occurrences

Common applications of hybrid imaging technique, with linkage to relevant legislation

SPECT/CT room design to incorporate safety considerations

PET/CT Equipment Including Safe Working Practice:

As above but considering PET/CT as opposed to SPECT/CT

Fundamental Imaging Parameters within the Hybrid Environment:

Fundamental acquisition parameters in hybrid imaging

Fundamental utilisation of Computed Tomography within the hybrid imaging environment

Radiation protection implications to be considered when performing a CT scan within the hybrid imaging environment, including compliance with current legislation

Fundamentals of CT multi-planar reconstruction

An introduction to the major components of a modern CT scanner

The development of fundamental quality control tests

Principle of SPECT/CT imaging as applied to cardiac, neurology and oncology imaging

Impact of Hybrid Imaging on Patient Management:

Care of the patient within the hybrid imaging environment including appropriate preparation and dosimetry considerations

Clinical value of hybrid imaging within current patient pathways

Clinical indications / applications for the use of SPECT/CT

Current national hybrid imaging guidelines and Government strategies

The future integration of hybrid imaging systems within radiotherapy practice

Further establishment of multidisciplinary roles within a hybrid imaging environment

Emerging Technology:

Justification and current thinking related to the use of Computed Tomography within the hybrid environment

Justification and current thinking related to the use of resolution recovery within the hybrid environment

The future production of radiopharmaceutical tracers required for hybrid Imaging Practice

An introduction to PET/MR, developing an appreciation of its current position in clinical practice and the growing knowledge base surrounding the clinical applications of the modality

### **Part 3: Teaching and learning methods**

**Teaching and learning methods:** The learning and teaching strategy for this module has been developed to enable individuals to demonstrate a good level of understanding associated with the current applications of hybrid imaging practice. This will include such things as equipment design, safety, current training implications and the most effective use of this developing imaging modality. The module will also consider future development opportunities for the hybrid imaging practitioner and relate these to potential growth areas in clinical practice. These topics will provide the student with the opportunity to consider the developing role of the modality and how through appropriate use/optimisation it can be used to enhance overall diagnostic pathways.

To ensure engagement in the module learning opportunities, assessment will be linked to involvement in and contribution to discussion boards where specific tasks will be set. The tasks will be constructed to ensure that the module learning outcomes must be addressed. Contributions to these tasks will form source material from which students may extract content to add to their case study/presentation. Experience from other modules using this format indicates the potential for valuable discussion relating to the module content and helps ensure timely engagement as opposed to leaving personal study and revision to the end of the module delivery. The capacity to engage in debate with peers helps to facilitate networking, peer/shared learning and knowledge exchange.

A variety of teaching approaches will be utilised within the module.

Scheduled learning will include upto 30 hours engaged with lectures, seminars, tutorials, discussion board entries, project supervision, work based learning.

Independent learning will include upto 120 hours engaged with essential reading, case study preparation, presentation development and presentation construction and personal reflection on learning.

Additional student centred learning guided by tutorials and discussion will include:

Evaluation and discussion of current working practices

Consideration as to the future role of the Nuclear Medicine Practitioner

Contact Hours:

Contact hours will be achieved through a blended learning approach that will include distance based education supplemented by knowledge exchange events. This distance based education will embrace the University's current vision associated with Technology Enhanced learning. Such learning will include but not be limited to, asynchronous delivery of lecture material through narrated presentations, notes and other guided reading, VLE discussion board forums with specific objectives, workplace tasks, and other study tasks deemed appropriate to the development of student knowledge.

Formative feedback on allocated study tasks will be provided. Contact with the module leader for discussion of module related issues will be facilitated by email, phone conversations and through interaction at the knowledge exchange events.

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

**MO1** Identify the various components of hybrid imaging equipment and demonstrate an awareness of ongoing developments

**MO2** Justify the use of hybrid imaging technology and illustrate how such technology should be used in order to maximise both staff and patient safety

**MO3** Appreciate the multidisciplinary aspects of hybrid imaging, demonstrating awareness for current and future developments in clinical practice

**MO4** Evaluate the range of radiation protection practices currently utilised within a hybrid imaging environment

**MO5** Appraise a variety of methods of image acquisition, fusion and reconstruction in order to critique final image production

**MO6** Critically evaluate the legislation governing the use of hybrid imaging technology including associated Radiopharmaceuticals

**MO7** Critically evaluate contemporary research within the hybrid nuclear medicine environment and demonstrate an overall understanding of the role of the modality within various patient pathways

**MO8** Explore the multidisciplinary aspects of hybrid imaging and consider the impact this might have on patient treatment regimens

**MO9** Appreciate Government strategies with regards to the current and future provision of hybrid imaging services

**MO10** Critically evaluate current imaging techniques for hybrid imaging practice with reference to the role of the hybrid imaging practitioner

**MO11** Critically evaluate emerging/developing imaging techniques for hybrid imaging practice with reference to the role of the hybrid imaging practitioner

**MO12** Relate the appropriate scientific and technological principles of hybrid imaging to current models of nuclear medicine practice

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 120 hours

Face-to-face learning = 30 hours

Total = 150

**Reading list:** The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/uzysq6-15-m.html) via the following link <https://uwe.rl.talis.com/modules/uzysq6-15-m.html>

## Part 4: Assessment

**Assessment strategy:** A 1500 word case study and a 10 minute audio narrated presentation will demonstrate achievement of the learning outcomes.

The 1500 word case study will enable the student to either:

Consider their current departmental protocols linked to hybrid imaging and through reflective practice demonstrate the importance of the modality to current patient pathways.

Or

Discuss how the introduction of hybrid imaging within a Nuclear Medicine department might alter/enhance the patient pathway.

The audio narrated presentation will provide the student with the opportunity to critically evaluate the established and emerging roles of the hybrid imaging practitioner within current clinical practice. This may include discussion related to some of the following areas:

The appropriate use of Computed Tomography within the hybrid imaging environment

The development of cross-sectional anatomy skills for the Nuclear Medicine Practitioner

Radiation protection considerations for hybrid practice

Development of extended roles for the non-medic within hybrid imaging

The development of core competencies for hybrid practice

Discussion board activities will provide the opportunity for engagement with peer assisted learning and profession specific debate. Such activities will help consolidate

hybrid imaging knowledge and provide a focus for the development of new ideas.

Formative assessment related to these discussion board contributions will be provided by the module team and will highlight good student understanding and areas where further exploration and development might appear appropriate.

**Assessment tasks:**

**Case Study (First Sit)**

Description: 1500 word case study

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO10, MO11, MO12, MO2, MO3, MO4, MO5, MO7, MO8, MO9

**Presentation (First Sit)**

Description: Audio narrated presentation

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO12, MO2, MO4, MO5, MO6, MO7, MO8, MO9

**Case Study (Resit)**

Description: 1500 word case study

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO10, MO11, MO12, MO2, MO3, MO4, MO5, MO7, MO8, MO9

**Presentation (Resit)**

Description: Audio narrated presentation

Weighting: 50 %



Final assessment: Yes

Group work: No

Learning outcomes tested: MO12, MO2, MO4, MO5, MO6, MO7, MO8, MO9

## **Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Nuclear Medicine [Distance] MSc 2022-23