

CDA4 Programme Design Template Module specification



University of the
West of England

CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data					
Module Title	Enhancing Nuclear Medicine Practice				
Module Code	UZYSQ5-30-M	Level	M	Version	1
Owning Faculty	Health and Life Sciences	Field	Allied Health Professions		
Contributes towards	MSc Nuclear Medicine				
UWE Credit Rating	30 credits	ECTS Credit Rating	15	Module Type	Project
Pre-requisites	None		Co- requisites	None	
Excluded Combinations	None		Module Entry requirements		
Valid From	October 2013		Valid to		

CAP Approval Date	9/7/13
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Part 2: Learning and Teaching	
Learning Outcomes	On successful completion of this module students will be able to: • Discuss the emerging aspects of Nuclear Medicine in relation to clinical technique, professional practice and impact on patient outcome (<i>component A, elements 1 and 2</i>) • Understand the role of Nuclear Medicine in the management of a wide range of disease processes (<i>component A, element 2</i>) • Critically evaluate current technological advancements (both hardware and software) and consider their relevance to modern Nuclear Medicine practice (<i>component A, elements 1 and 2</i>) • Appreciate modern processing/image reconstruction techniques and consider their implications in relation to diagnostic accuracy (<i>component A, elements 1 and 2</i>) • Critically evaluate the organisation and managerial structure of a modern Nuclear Medicine department (<i>component A, element 2</i>) • Process and manipulate images in the clinical environment in a critical manner and discuss the clinical implications of various data processing techniques (<i>component A, element 2</i>) • Critically evaluate the requirements of modern radiopharmaceutical

	production including various distribution methods (<i>component A, elements 1 and 2</i>) • Appreciate the importance of strategic planning and preventative maintenance techniques within the current Nuclear Medicine environment (<i>component A, element 2</i>) • Display awareness of current professional drivers associated with patient waiting times and highlight how these might influence the organisation of modern patient scheduling systems (<i>component A, elements 1 and 2</i>) • Evaluate multidisciplinary aspects of clinical nuclear medicine practice and the necessity for holistic patient centred care (<i>component A, elements 1 and 2</i>) • Discuss the importance of current training requirements for the Nuclear Medicine workforce (<i>component A, elements 1 and 2</i>) • Critically evaluate contemporary research and evidence-based practice within the modern Nuclear Medicine environment (<i>component A, elements 1 and 2</i>) • Appreciate the clinical value of advancing Nuclear Medicine technology in relation to patient prognosis (<i>component A, elements 1 and 2</i>) • Consider the value of clinical mentorship and workforce development within modern nuclear medicine practice (<i>component A, elements 1 and 2</i>) • Demonstrate problem solving skills and an ability to work within a multidisciplinary team (<i>component A, element 2</i>) • Prepare written statements and engage in professional debate following research into specified areas of Nuclear Medicine practice (<i>component A, elements 1 and 2</i>)
Syllabus Outline	Data Acquisition and Processing • The optimal use of imaging parameters and technological advancements within current Nuclear Medicine practice • Consideration as to the values of various data acquisition and image processing techniques • Introduction to 3D reconstruction algorithms Nuclear Medicine Strategic Developments • The importance of planned preventative maintenance within the Nuclear Medicine environment • An introduction to equipment procurement • Awareness of the optimal running of a modern Nuclear Medicine department with linkage to current professional drivers • Consideration as to the importance of workforce development and support frameworks • Critical evaluation of radiopharmacy procedures, working environments, legislation and distribution methods Awareness of Disease Processes – Diagnosis and Treatment • Understand the role of Nuclear Medicine in the management of a wide range of disease processes • Consideration as to the level of knowledge needed by the Nuclear Medicine workforce to fully understand a range of common disease

	processes • Awareness of the developing nature of Nuclear Medicine and how such development may influence current patient pathways • Therapeutic Nuclear Medicine and the use of Nuclear Medicine in planning, treatment and monitoring regimes • Enhancement of understanding associated with radiation dosimetry Advancing Aspects of Nuclear Medicine Practice • Future developments within the field of Nuclear Medicine / molecular imaging • Future considerations related to developing radioisotope tracers /radiopharmaceutical shortages • Consideration as to the developing role of the Nuclear Medicine Practitioner • Consideration as to the use of other imaging modalities within the Nuclear Medicine environment Research in Nuclear Medicine • Current research areas associated with Nuclear Medicine/molecular imaging • Evidence based practice & NICE • Current themes associated with service improvement in Nuclear Medicine
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. An approximated breakdown of these contact hours can be seen in the section below Formative feedback on allocated study tasks will be provided. Contact with the module leader for discussion of module related issues will be facilitated by e-mail, phone conversations and through interaction at the knowledge exchange events
Teaching and Learning Methods	The learning and teaching strategy for this module has been developed to provide students with the opportunity to consider the current status of Nuclear Medicine services and to appreciate a range of strategic and technological advancements that have the potential to further enhance the modality. Such areas will include the optimal utilisation of equipment/technology, awareness of the role of Nuclear Medicine within current healthcare models, consideration as to the efficient management/running of a Nuclear Medicine service and discussion associated with future development opportunities and how these might affect the service, the workforce and importantly the patient. To ensure engagement with the module learning opportunities, assessment will be linked to involvement in and contribution to discussion boards where specific tasks will be set. These tasks will be constructed to ensure that the module learning outcomes are addressed. Contributions to these tasks will form source material from which students may extract content to add to their

	cognitive map/portfolio of evidence. 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 used including; narrated presentations, video presentations, discussions, seminars, on-line workshops, and article review. Additional student centred learning guided by tutorials and discussion forums will include • Evaluation of current working practices • Directed practical exercises to be undertaken in the student's place of work Scheduled learning will include upto 80 hours engaged with lectures, video presentation, seminars, tutorials, discussion board entries, project supervision, work based learning Independent learning will include upto 220 hours engaged with essential reading, assignment preparation and completion, directed work-based tasks, consideration of current working protocols and personal reflection on learning
Key Information Sets Information	N/A – Postgraduate Module
Reading Strategy	The following reading strategy will be made available to all students via the module handbook displayed on BlackBoard Core Reading Any essential reading will be indicated clearly, along with the method for accessing it, e.g. students may be required to purchase a set text, be given a print study pack or be referred to texts that are available electronically through the Library. Module guides will also reflect the range of reading to be carried out. Further Reading Further reading will be required to supplement the set text and other printed readings. Students are expected to identify all other reading relevant to their chosen topic for themselves. They will be required to read widely using the library search facilities, a variety of bibliographic and full text databases, and Internet resources. Many of these resources can be accessed remotely. The purpose of this further reading is to ensure students are familiar with current research related to the ongoing development of the Nuclear Medicine profession. Access and Skills The development of literature searching skills is supported by the Library Services web pages which include interactive tutorials on search skills, the use of specific electronic library resources, evaluating information and various referencing styles. Students will be encouraged to access such resources in order to fully utilise the available range of online help. Further support will be provided by the module team again through the creation of narrated

	presentations
Indicative Reading List	Recommended Reading List: Delbeke, D. and Israel, O., eds. (2010) <i>Hybrid PET/CT and SPECT/CT Imaging: A Teaching File</i>. New York: Springer Christian, P. (2012) <i>Nuclear Medicine and PET/CT: Technology and Techniques</i>. 7th ed. New York: Mosby Elsevier Schulthess G., ed. (2007) <i>Molecular Anatomic Imaging: PET-CT and SPECT-CT Integrated Modality</i>. Philadelphia: Lippincott Williams & Wilkins, Ziessman H. A., O'Malley J. P. and Thrall J.H., (2006) <i>Nuclear Medicine: The Requisites</i>. 3rded.Philadelphis: Mosby Elsevier Cantone, M., (2011) <i>Radiation Physics for Nuclear Medicine</i>. London: Springer Kim, E., ed.(2007) <i>Sectional Anatomy : PET/CT and SPECT/CT</i>. London: Springer Reiser, M., ed. (2009) <i>Multislice CT</i>, 3rded. London: Springer Seeram, E., (2009) <i>Computed Tomography :Physical Principles, Clinical Applications, and Quality Control</i>.3rd ed. Edinburgh: Saunders Bolster, A. ed. (2003) <i>Quality Control of Gamma Camera Systems</i>. Report No. 86. York: Institute of Physics in Engineering and Medicine Hillel, P. ed. (2004) <i>Basics of Gamma Camera Positron Emission Tomography</i>. Report No. 87. York: Institute of Physics in Engineering and Medicine International Atomic Energy Authority (IAEA) (2009) <i>Quality Assurance for SPECT Systems</i>. IAEA Human Health Series No. 6. Vienna: IAEA Journals Resources Seminars in Nuclear Medicine European Journal of Nuclear Medicine & Molecular Imaging Journal of Nuclear Medicine Clinical Nuclear Medicine Nuclear Medicine Communications Nuclear Medicine and Biology All journals can be found using the library search on the library webpages (http://www1.uwe.ac.uk/library/). Off campus users will be able to access journal articles using their UWE network username and password Alternatively, you can search for articles using a database (see below for a list of suitable databases), which will provide search and display facilities. Databases Anatomy TV Anatomy & Physiology Online Cinahl Cochrane

	Embase Medline Example Background Articles (<i>Others will be highlighted during the module</i>) Aparici, C., (2012) Functional imaging for prostate cancer: therapeutic implications. <i>Seminars in Nuclear Medicine</i>. 42 (5), pp. 328-342 Frey, K., et al. (2011) ABNM position statement: nuclear medicine professional competency and scope of practice. <i>Journal of Nuclear Medicine</i>. 52(6), pp 994 - 997 Hutton, B., (2010) New SPECT technology: potential and challenges, <i>European Journal of Nuclear Medicine & Molecular Imaging</i>. 37, pp 1883-1886 Lee, D., (2011) Molecular theranostics: a primer for the imaging professional. <i>American Journal of Roentgenology</i>. 197 (2), pp. 318-324 Lucignani, G., Jereczek-Fossa, J., Orecchia, R., (2004) The role of molecular imaging in precision radiation therapy for target definition, treatment planning optimisation and quality control, <i>European Journal of Nuclear Medicine and Molecular Imaging</i>. 31(8), pp. 1059-1063 Townsend, D. (2008) Positron emission tomography/computed tomography. <i>Seminars in Nuclear Medicine</i>. 38, pp. 152-166 Zaidi, H. (2012) <i>Recent Advances in Hybrid Imaging for Radiation Therapy Planning: The Cutting Edge</i>. Available from: http://pinlab.hcuge.ch/pdf/PETClinics2011.pdf Zuckier, L. (2012) Hybrid imaging in planar scintigraphy: new implementations and historical precedents, <i>Seminars in Nuclear Medicine</i>, 42 (1) pp. 62 - 72 Websites & Electronic Resources: http://www.appliedradiology.com http://www.iaea.org/About/Policy/GC/GC54/GC54InfDocuments/English/gc54inf-3-att1_en.pdf http://nucleus.iaea.org/HHW/NuclearMedicine/NuclearMedicineLibrary/IAEALibrary/index.html http://www.eanm.org/ http://www.bnms.org.uk/ http://www.ipem.ac.uk/
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Part 3: Assessment	
Assessment Strategy	The production of a 1500 word equivalent cognitive map and a 3000 word portfolio of discussion board extracts will demonstrate achievement of the learning outcomes. Component A element 1 – 1500 word equivalent cognitive map This element will require the student to critically evaluate an advanced / developing area of Nuclear Medicine practice in order to demonstrate overall benefits that might be seen by the imaging service / patient /

	workforce. Such an activity will promote evaluation of current practice, consideration as to future practice and awareness of the potential benefits that such changes might bring. The specific chosen area does <i>not</i> necessarily have to be performed within the student's clinical department, but should relate to current clinical practice and empirical based evidence. A range of possible topic areas are included below • Workforce development / Training / CPD and Mentorship in Nuclear Medicine • Management and organisation of the Nuclear Medicine department • Multidisciplinary working and decision making (i.e. referring / reporting) • Data acquisition / processing / image quality, data protection and information governance • Preventative maintenance of Nuclear Medicine Equipment and the value of Quality Control measures • Optimal radiopharmaceutical utilisation, transportation and safe disposal • Optimising Nuclear Medicine techniques / developing a new imaging service • Role of hybrid / multiplexing imaging and provision of a “one stop clinical service” Component A, element 2 - 3000 word portfolio of discussion board / ‘wiki’ extracts The portfolio will assess selected module learning outcomes. Inclusion of extracts taken from discussion board / ‘wiki’ contributions will help ensure continuous student engagement throughout the module as well as providing the opportunity to develop skills associated with problem solving, peer assisted learning, critical reflection and debate. Formative assessment will be achieved by feedback on discussion board contributions from the module team, indicating where good understanding has been achieved or where there is scope for further exploration and development.
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Identify final assessment component and element	Component A, element 2	
% weighting between components A and B (Standard modules only)	A:	B:
First Sit		
Component A Description of each element	Element weighting (as % of component)	
1. Cognitive Map	50%	
2. Portfolio of discussion board / ‘wiki’ extracts	50%	
Component B Description of each element	Element weighting (as % of component)	

Resit (further attendance at taught classes is not required)	
Component A Description of each element	Element weighting (as % of component)
1. Cognitive Map	50%
2. Portfolio of discussion board / 'wiki' extracts	50%
Component B Description of each element	Element weighting (as % of component)
1.	
2.(etc)	
If a student is permitted an EXCEPTIONAL RETAKE of the module the assessment will be that indicated by the Module Description at the time that retake commences.	