

**MODULE SPECIFICATION**

Part 1: Information			
Module Title	Advanced Cardiac Physiology and Neurophysiology		
Module Code	USSJY3-30-3	Level	3
For implementation from	September 2017		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Health & Applied Sciences	Field	Applied Sciences
Department	Applied Sciences		
Contributes towards	BSc (Hons) Healthcare Science (Physiological Sciences)		
Module type:	Standard		
Pre-requisites	USSKAW-30-2 Cardiac Physiology & Pathophysiology A USSKAX-30-2 Cardiac Physiology & Pathophysiology B OR USSKL9-30-2 Pathophysiological Sciences A USSKLA-30-2 Pathophysiological Sciences B		
Excluded Combinations	N/A		
Co- requisites	USSJYC-30-3 Applied Neurophysiology, Respiratory and Sleep Physiology		
Module Entry requirements	Level 5 (or equivalent) physiological sciences qualification		

Part 2: Description
<p>This module contains two distinct units, namely</p> <ul style="list-style-type: none"> • Unit 1: Advanced Cardiac Physiology • Unit 2: Advanced Neurophysiology <p>Students complete one of these units as prescribed by their pathway. Unit 1 aligns to the Healthcare Science (Physiological Sciences) Cardiac Physiology pathway. Unit 2 aligns to the Healthcare Science (Physiological Sciences) Neurophysiology pathway.</p> <p>The syllabus covers:</p> <p>1. Advanced Cardiac Physiology [Cardiac Physiology pathway]</p> <ul style="list-style-type: none"> • Cardiac Pacing <ul style="list-style-type: none"> ○ Basic electrophysiological concepts underlying pacing ○ Cardiac cycle and potentials ○ Equipment and set up ○ Principles and application of rhythm management devices ○ Pacing modes, codes, and timing cycles

- Indications & techniques for permanent and temporary pacing
- Haemodynamics of cardiac pacing
- Indications and contraindications for device implantation
- Implantation techniques and asepsis, and removal
- Follow up assessment of pacemaker patients & troubleshooting
- Principles and applications for use of Implantable cardioverter defibrillators and cardiac resynchronisation therapy
- Introduction to echocardiography
 - The principles of ultrasound and echo modes
 - Introduction to windows and views, velocities and pressures
 - Indications for echo
- Utilising echocardiography to assess pathophysiological cardiac conditions
- Congenital heart disease
 - Paediatric ECG interpretation
 - Embryology
 - Circulatory changes at birth
 - Simple and complex cardiac abnormalities including:
 - Atrial Septal Defects
 - Ventricular Septal Defects
 - Patent Ductus Arteriosus
 - Coarctation of the Aorta
 - Tetralogy of Fallot
 - Complex pathologies
 - Treatment and management
 - Physiology, pathophysiology and pharmacology relating to Inherited, Genetic and Acquired Heart conditions & cardiac output control
- Pharmacology
 - Be able to describe and evaluate the mechanism of action and indications for cardiovascular drugs for a range of applications including:
 - Hypertension
 - Heart failure
 - Anti-coagulents /anti-platelet
 - Inotropes
 - Rhythm control
 - Cardiac catheterisation lab pharmacology
 - Dyslipidaemias

Additionally, it is expected that students will integrate knowledge from both this unit and the co-requisite USSJY4-30-3 Applied Cardiac Physiology module in order to fully understand the scientific basis and diagnosis of cardiac conditions.

2. Advanced Neurophysiology [Neurophysiology pathway]

- Neuroanatomy and physiology and pathophysiology
- Major and subdivisions of the brain
- Peripheral nervous system: cranial and peripheral nerves, neuropathies and myopathies, roots and muscles
- Embryology: neural tube, origins of neurones and glia, neural crest, cell migration, formation of brain and spinal cord, myelination
- Cerebral circulation: control of cerebral circulation, effect of altered blood gases, measurement of cerebral blood flow, CSF production, constituents, circulation and pressure
- Functions of subcortical structures: extrapyramidal and pyramidal systems, cerebellum and related pathways, disorders of movement
- Neurological conditions, their pathology and treatment:
 - epilepsy classification
 - treatment
 - infective
 - degenerative
 - cerebrovascular
 - space-occupying lesion (SOL)
 - metabolic
 - demyelinating conditions

- non-organic disorders
- Psychology of disease
- Psychosocial
- Psychological

Additionally, it is expected that students will integrate knowledge from both this unit and the Applied Neurophysiology unit within the co-requisite USSJYC-30-3 module in order to fully understand the scientific basis and diagnosis of neurophysiological conditions.

There will be several blocks of contact time at UWE which include laboratory workshops, lectures and tutorials. The contact time for this module will equate to approximately 15 hours per block (a total of 75 hours).

Theoretical material within the module will be presented to the students in the form of lectures throughout the block periods in each of the semesters in the academic year. The learning of lecture content will be reinforced through tutorials and 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.

A number of relevant practical sessions will be incorporated during the campus based blocks in addition to the work based learning that must be achieved under supervision by a workplace supervisor. Practical sessions will both drive hands on learning and the acquisition of technical skills at both an individual and group working level.

The remainder of the independent learning time allocated to the module should be spent preparing for assessments [B1], and undertaking revision for the exam [A1].

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.

Part 3: Assessment

The assessments within this module have been designed to show that the student has developed the required knowledge and clinical skills required to practice as a cardiac physiologist or neurophysiologist, as appropriate. There will two components to the assessment of this module.

Component A will comprise of an in-class examination under controlled conditions. This examination will assess a broad knowledge base, and focus on data analysis & interpretation of clinical scenarios and case based material, in order to assess the understanding and application of specialist clinical knowledge

Component B will comprise of an integrated case-study portfolio, which will include completion of a range of relevant clinical tasks undertaken in practical classes and clinical workshops. The focus of the clinical workbook will be to analyse, assess, & interpret clinical data and patient scenarios. This is an essential requirement of a healthcare science practitioner.

Formative feedback is available to students throughout the module through group discussions, and in workshops. Students are provided with formative feed-forward for their exam through a revision and exam preparation session prior to the exam and through the extensive support materials supplied through Blackboard.

All work is marked in line with the Faculty's Generic Assessment Criteria and conforms to university policies for the setting, collection, marking and return of student work. Where an individual piece of work has specific assessment criteria, this is supplied to the students when the work is set.

This assessment strategy has been designed following best practice on effective assessment from JISC (<http://www.jisc.ac.uk/whatwedo/programmes/elearning/assessment/digiassess.aspx>) and The Open University's Centre for Excellence in Teaching and Learning (<http://www.open.ac.uk/opencetl/centre-open-learning-mathematics-science-computing-and-technology/activities-projects/e-assessment-learning-the-interactive-comp>).

Technical design and deployment of the activities will also follow best practice developed at UWE by the Education Innovation Centre in collaboration with academic colleagues across the university. Staff guidance and support are already in place (<http://info.uwe.ac.uk/online/Blackboard/staff/guides/summative-assessments.asp>).

Identify final timetabled piece of assessment (component and element)	A1	
% weighting between components A and B (Standard modules only)	A:	B:
	50	50
First Sit		
Component A (controlled conditions) Description of each element	Element weighting (as % of component)	
1. In class assessment (3 hours)	100%	
Component B Description of each element	Element weighting (as % of component)	
1. Integrated case study portfolio	100%	
Resit (further attendance at taught classes is not required)		
Component A (controlled conditions) Description of each element	Element weighting (as % of component)	
1. In class assessment (3 hours)	100%	
Component B Description of each element	Element weighting (as % of component)	
1. Integrated case study portfolio	100%	

Part 4: Teaching and Learning Methods

Learning Outcomes	<p>On successful completion of this module students will be able to fulfil the learning outcomes from 1 of the following 2 Physiological Sciences themed units of study:</p> <ul style="list-style-type: none"> • Unit 1: Advanced Cardiac Physiology • Unit 2: Advanced Neurophysiology <p>Unit 1 aligns to the Healthcare Science (Physiological Sciences) Cardiac Physiology pathway. Unit 2 aligns to the Healthcare Science (Physiological Sciences) Neurophysiology pathway.</p> <p>The syllabus covers:</p> <p>1. Advanced Cardiac Physiology [Cardiac Physiology pathway]</p> <ul style="list-style-type: none"> • Discuss the key areas of physiology, pathophysiology and pharmacology related cardiac pacing, including bradycardia management [A1, B1] • Discuss the key areas of physiology, pathophysiology and pharmacology relating to acquired and inherited cardiac abnormalities and their treatment and management [A1, B1] • Discuss the differences between children and adults with respect to cardiac physiology and pathophysiology, with reference to a range of disease pathologies [A1, B1] • Actively seek accurate and validated information from all available sources with respect to cardiac investigations [A1, B1] • Select and apply appropriate analysis or assessment techniques and tools [A1, B1] • Critically discuss the problems associated with the care of patients undergoing cardiac investigations or treatments [A1, B1] <p>2. Advanced Neurophysiology [Neurophysiology pathway]</p> <ul style="list-style-type: none"> • Describe the physiology of the blood–brain barrier and the cerebrospinal fluid (CSF) circulatory system [A1] • Explain the relationship between the dysfunction of subcortical structures and neurological symptomology [A1] • Evaluate the current definition, classification and treatment of adult epilepsy [A1, B1] • Appraise common neurological conditions and the evidence base that underpins treatment decisions [A1, B1] • Evaluate the effect of levels of awareness and an abnormally altered patient psyche on the reliable measurement of physiological variables [B1] • Describe a range of neurological conditions, their pathology and treatment for which the EEG and evoked potentials have a diagnostic or monitoring role [A1, B1] • Critically appraise the assessment and management needs of particular specialist populations in Neurophysiology, to include the challenges of ageing, dementia, culture and language [A1, B1] 																
Key Information Sets Information (KIS)	<p>Key Information Set - Module data</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"></td> </tr> <tr> <td colspan="4"><i>Number of credits for this module</i></td> <td style="text-align: center; border: 2px solid black;">30</td> </tr> </table>										<i>Number of credits for this module</i>				30		
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Contact Hours	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #e0e0e0;">Hours to be allocated</th> <th style="background-color: #e0e0e0;">Scheduled learning and teaching study hours</th> <th style="background-color: #e0e0e0;">Independent study hours</th> <th style="background-color: #e0e0e0;">Placement study hours</th> <th style="background-color: #e0e0e0;">Allocated Hours</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">300</td> <td style="text-align: center;">75</td> <td style="text-align: center;">225</td> <td style="text-align: center;">0</td> <td style="text-align: center;">300</td> <td style="text-align: center;"></td> </tr> </tbody> </table>					Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours		300	75	225	0	300	
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Total Assessment	<p>The table below indicates as a percentage the total assessment of the module which constitutes a;</p> <p>In class assessment: In class assessment Coursework: Written assignment or essay, report, dissertation, portfolio, project or in class test Practical Exam: Oral Assessment and/or presentation, practical skills assessment, practical exam (i.e. an exam determining mastery of a technique)</p> <table border="1"> <tr> <td>Total assessment of the module:</td> <td></td> <td></td> </tr> <tr> <td>In class assessment percentage</td> <td></td> <td>50%</td> </tr> <tr> <td>Coursework assessment percentage</td> <td></td> <td>50%</td> </tr> <tr> <td>Practical exam assessment percentage</td> <td></td> <td>0%</td> </tr> <tr> <td></td> <td></td> <td>100%</td> </tr> </table>	Total assessment of the module:			In class assessment percentage		50%	Coursework assessment percentage		50%	Practical exam assessment percentage		0%			100%
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Reading List	<p>Modernising Scientific Careers Programme Training Manual for appropriate Division and Specialist Route. Available from http://www.nshcs.hee.nhs.uk/curricula</p> <p>The module reading list can be accessed through the following link: https://uwe.rl.talis.com/lists/4E22AC98-A8BB-F303-29C2-51C49F8AE7B5.html</p>															

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