



ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data					
Module Title	Cellular Pathology and Oncology				
Module Code	USSJYQ-30-M	Level	M	Version	1
UWE Credit Rating	30	ECTS Credit Rating	15	WBL module?	No
Owning Faculty	Health and Applied Sciences	Field	Applied Sciences		
Department	Biological Biomedical and Analytical Sciences	Module Type	Standard		
Contributes towards	MSc Biomedical Science				
Pre-requisites	Study of cellular pathology in undergraduate degree	Co- requisites	None		
Excluded Combinations	None	Module Entry requirements	Study of cellular pathology at undergraduate degree level		
First CAP Approval Date	2 nd February 2016	Valid from	September 2016		
Revision CAP Approval Date		Revised with effect from			

Review Date	~ 5 years post approval for PSRB requirements
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Part 2: Learning and Teaching	
Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <p>Understand good laboratory practice related to Cellular Pathology techniques. (A and/or B)</p> <p>Understand the principles of tissue preparation for histology and the mechanism by which common staining methods work. (A and/or B)</p> <p>Show an appreciation of the epidemiology and aetiology of cancer. (A and/or B)</p> <p>Understand the key features of tumour cells, progression towards malignancy and the cellular and molecular biology underpinning malignant disease. (A and/or B)</p> <p>Discuss the role of Cell Pathology in the diagnosis and prognosis of both neoplastic and non-neoplastic disease in the major organs and tissues. (A and/or B)</p> <p>Critically discuss current methods for cancer screening, and the potential for development of existing and potential future screening programmes. (A and/or B)</p> <p>Understand current therapeutic approaches and be able to discuss potential future avenues for therapy. (A and/or B)</p>
Syllabus Outline	<p><u>Technical aspects of Cellular Pathology</u></p> <p>Preparative processes in Cellular Pathology; microscopy; the theory of stain action; immunocytochemistry; cytopathology; molecular techniques used and their application.</p>

	<p><u>Principles of Cancer Biology</u></p> <p>The hallmarks of cancer; its genetic basis; oncogenes and tumour suppressor genes; cell signalling in tumours; tumour progression; invasion and metastasis; the role of cancer stem cells.</p> <p>Cancer screening; diagnosis; grading and staging; existing therapeutic strategies; potential future therapies.</p> <p><u>Tissues & Organs: Pathology & Investigation</u></p> <p>A systematic overview of the structure and function of the major organs, their pathology, and associated neoplastic disease. (To include: liver; lung; skin; prostate; reproductive system; gastrointestinal tract; the urinary/renal system; breast; bone; skin; pancreas; neuroendocrine system).</p> <p>Non-neoplastic disease of the major organs requiring cellular pathological investigation; systemic disease such as amyloidosis and renal disease.</p> <p>The role of cellular pathology in research; quantitation; quality control.</p>
Contact Hours	<p>Formal lectures – 2 hours per week during teaching weeks (two semesters)</p> <p>M level tutorials – 1 hour per week for 20 weeks</p> <p>Practical classes – 3 x 3 hour laboratory-based practicals.</p>
Teaching and Learning Methods	<p>Teaching will comprise a mix of formal lecture, group discussion, tutorials and data interpretation exercises. For each hour of scheduled study students are advised to undertake 9 hours of independent study - as this is an M level module the amount of guidance on activities will be reduced as the year progresses so that students develop independent learning skills, and gain the chance to study topics from within the module in alignment with their areas of interest. The interactive nature of the M level tutorials will mean that students will need to spend time each week preparing for the next session. The students will be advised to allow at least 50 hours of the independent study time working on the coursework for the module (which contributes 50% of the module mark).</p> <p>Students on the module will also be required to attend a conference week at an appropriate time in the year (dependent on changes to the academic calendar). During this week a range of visiting lecturers will be brought in to give keynote lectures (for example based on their clinical practice) or research focused lectures that map to the syllabus content. The conference week will also give students an experience of what it is like to attend a scientific conference, with an intensive schedule of talks across the week to be attended. Engagement with the conference week will be assessed as part of USSJYR-15-M (Advanced Topics in Biomedical Science) but the lecture content of conference week will augment this module as well.</p> <p>The taught component will be divided into discrete sections:</p> <p>The early part of the module will focus on the technical aspects of cellular pathology, this will include a practical class where technique will be put into practice and followed by a tutorial session to both review and reinforce learning, and provide guidance for a written assessment based on the laboratory work.</p> <p>The next section will focus on the cellular and molecular biology of cancer. This will be largely lecture-based and include a tutorial exercise on the grading and staging of cancer</p> <p>The remainder of the module will focus on different organ systems each week, their pathology and cellular pathology approaches to disease investigation. This section will include two practical classes – one focussing on prostate pathology and amyloidosis, the second on the grading and staging of solid tumours.</p> <p>The final section will also include tutorials on current research frontiers, the use of immunocytochemistry in research, the use of molecular techniques in cellular pathology, and cancer screening programmes - where students may be given reading materials or case studies in advance and will be expected to actively participate in the session.</p> <p>In addition to lectures, and practicals, students are expected to prepare for tutorial sessions by carrying out designated reading tasks. Furthermore, they are expected undertake further independent reading – with guidance given during lectures. This reading is designed to</p>

	<p>support student learning both for the completion of coursework, but also in preparation for the final exam to ensure both breadth and depth to their knowledge.</p>
<p>Reading Strategy</p>	<p>At Masters level students are expected to demonstrate the ability to find information, assess its relevance and utilise it in their studies in an independent manner; however the programme team recognise that students entering the programme may be at different levels of the development of the skills required to undertake this successfully. Therefore module leaders will provide you with a starting point in terms of core readings and the lecture material will also give you a strong starting point. However it is in the area of further reading that you need to show the independence of skills and of knowledge development, so you will need to find the further readings yourself. However, the skills required to do this are covered during the early stages of the course, during induction week you will have a library induction session, and in the Research and Diagnostic Methodologies module (USSJYT-30-M) that you take during the first semester we will cover how to undertake a literature search and how to assess and use the material you find appropriately. The programme tutorials will provide opportunities for you to further develop these skills and to ask any questions that you have. Further support and guidance is available through the library which runs workshops that you can sign up to, and also has advice in its website.</p> <p>All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, the library catalogue and access to generic resources such as referencing tutorials. Many resources can be accessed remotely. Students will be presented with opportunities within the curriculum to develop their information retrieval and evaluation skills in order to identify such resources effectively.</p> <p>Any essential reading will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given or sold a print study pack or be referred to texts that are available electronically, etc. This guidance will be available either in the module handbook, via the module information on Blackboard or through any other vehicle deemed appropriate by the module/programme leaders.</p> <p>If further reading is expected, this will be indicated clearly. If specific texts are listed, a clear indication will be given regarding how to access them and, if appropriate, students will be given guidance on how to identify relevant sources for themselves, e.g. through use of bibliographical databases.</p> <p>A detailed reading list will be made available through relevant channels, e.g. module handbooks, Blackboard, etc.</p>
<p>Indicative Reading List</p>	<p>The recommended module textbooks are:</p> <p>Most recent editions of:</p> <p>Stevens, A. Lowe, J. <i>Core Pathology</i>. London: Mosby.</p> <p>Weinberg, R.A. <i>The Biology of Cancer</i>. Abingdon: Garland.</p> <p>Cook, S.J. <i>Cellular Pathology</i>. :Bloxham: Scion.</p> <p>Other relevant texts for the module:</p> <p>Lakhani, S.R., Dilly, S.A., Finlayson, C.J. <i>Basic Pathology: An Introduction to the Mechanisms of Disease</i>. London: Arnold.</p> <p>Kiernan, J.A. <i>Histological and Histochemical Methods</i>. :Bloxham: Scion.</p> <p>Pecorino, L. <i>Molecular Biology of Cancer</i>. Oxford: Oxford.</p>

Suvarna, S.K., Layton, C., Bancroft, J.D. *Bancroft's Theory and Practice of Histological Techniques*. London:Elsevier.

Journals:

Applied Immunohistochemistry and Molecular Morphology (e-journal)
American Journal of Clinical Pathology (not currently available in UWE libraries)
American Journal of Surgical Pathology
BMC Cancer
British Journal of Cancer
Cancer Research
Carcinogenesis
Current Diagnostic Pathology
European Journal of Cancer
Histopathology
Histochemical Journal
Human Pathology
International Journal of Cancer
Journal of Clinical Pathology
Journal of Histochemistry and Cytochemistry
Journal of Pathology
Modern Pathology
Molecular Pathology
Nature Reviews Cancer
Pathology International
The Lancet

Part 3: Assessment

Assessment Strategy

The MSc BMS Programme has a programme level assessment strategy (see Programme Specification appendix 1), and all modules have their assessments designed to relate to that document. For parity across all routes the specialist subject modules on the MSc BMS programme have a 50:50 weighting of course work to final exam – this module is one of the specialist modules. Therefore the coursework has been designed in line with the programme assessment strategy.

Coursework:

The coursework here comprises of two elements:

Essay: this is an extended essay (3000 words) that is similar in style to a review article in a journal. This is therefore a highly relevant assessment for higher level science graduates to have undertaken, preparing them for future academic style writing in the professional lives. Students will be allowed to choose a topic based on an area of active research in either cancer biology or histopathology

Case Study: based on the practical class where cellular pathology is used in the diagnosis, grading, staging, and therefore prognosis of a common solid tumour. Students will be required to describe the technical application of techniques learned in the classroom to clinical diagnosis and the work up of prognostic information. This will take the form of a 1500 written report.

The assessments are marked to the BBAS standard PG marking criteria, and students are full briefed on the assessment both in writing and through a tutorial session. Students also develop several transferable skills during this assessment including negotiation (they are allowed to pick their own title and refine it), critiquing of published literature, scientific writing etiquette, and editing documents to a high editorial standard.

The exam enables students to demonstrate a breadth of knowledge that it would be reasonable for future employers to see in a Masters graduate in relation to their chosen specialism.

Identify final 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 <i>(as % of component)</i>	
1. Examination (3 hours)	100	
Component B Description of each element	Element weighting <i>(as % of component)</i>	
1. Extended Essay (3000 words)	50	
2. Case Study (1500 words)	50	
Resit (further attendance at taught classes is not required)		
Component A (controlled conditions) Description of each element	Element weighting <i>(as % of component)</i>	
1. Examination (3 hours)	100	
Component B Description of each element	Element weighting <i>(as % of component)</i>	
1. Extended Essay (5000 words)	100	
If a student is permitted a retake of the module under the University Regulations and Procedures, the assessment will be that indicated by the Module Description at the time that retake commences.		