



CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data					
Module Title	Clinical Biochemistry				
Module Code	USSJ6E-30-M	Level	M	Version	6
Owning Faculty	Health and Life Sciences	Field	Applied Sciences		
Contributes towards	MSc Biomedical Science Compulsory for MSc Biomedical Science (Clinical Biochemistry) and MSc Biomedical Science (Blood Science)				
	30	ECTS Credit Rating	15	Module Type	Standard
Pre-requisites			Co- requisites		
Excluded Combinations			Module Entry requirements		
Valid From	Sept 2012		Valid to	September 2018	
<b>CAP Approval Date</b>	30 <sup>th</sup> May 2012				

Part 2: Learning and Teaching	
Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <ul style="list-style-type: none"> <li>demonstrate an in-depth understanding of the pathophysiology of selected biochemical diseases. (exam – A1 and/or coursework - B)</li> <li>demonstrate an understanding of the role of research and technology in the advancement of the understanding of disease and diagnosis of disease. (exam – A1 and/or coursework - B)</li> <li>show an appreciation of the nature and significance of clinical biochemistry in its role in the diagnostic process. (exam – A1 and/or coursework - B)</li> <li>critically review research in the field of clinical biochemistry. (exam – A1 and/or coursework - B)</li> </ul>
Syllabus Outline	<p><b><i>Philosophy of clinical biochemistry/clinical utility (3 hours)</i></b> An area which under pins all of current diagnostic clinical biochemistry, discussing the value of biochemical and molecular biological tests in the investigation of disease. Introducing concepts such as sensitivity, specificity, predictive values and population selection.</p> <p><b><i>Enzymes(3 hours)</i></b> Examples of specific clinically relevant enzymes. Tissue damage and relationship to diagnostic use of enzymes and isoenzymes.</p> <p><b><i>Liver function/disease(6 hours)</i></b> Review of fundamental liver biochemistry. Causes of acute and chronic liver disease. Liver function tests. Differential diagnosis of jaundice and other disorders.</p> <p><b><i>Disorders of detoxification and excretory mechanisms – renal(6 hours)</i></b> Review of normal kidney functions. Tests of the glomerular function – renal clearance,</p>

	<p>GFR, serum creatinine and urea determinations. Outline of tests of tubular function. Renal calculi and their investigations.</p> <p><b>Acid-base disorders(6 hours)</b> Review of fundamental acid-base concepts. Metabolic and respiratory causes and clinical effects of acidosis and alkalosis. Disturbances to oxygen transport. Assessment of acid-base status; diagnosis and management of acid-base disorders.</p> <p><b>Endocrinology disorders (12 hours)</b> This will discuss the disorders of the hypothalamic-pituitary-target organ axis, with particular reference to the thyroid and adrenal glands. Other disorders of endocrine control will be studied which involve other systems of the body, for example: abnormalities in calcium metabolism; abnormalities in control of electrolyte and fluid balance. Furthermore, case studies will be used to discuss disorders of gonad function.</p> <p><b>Toxicology and drug therapy (6 hours)</b> Treatment of cancer using cytotoxic drugs highlighting factors which affect treatment with chemical agents.</p> <p><b>Plasma proteins in disease (6 hours)</b> The role of the plasma proteins in the investigation of disease. Typical topics studied include: clinical enzymology and applications in the diagnosis of coronary heart disease; paraproteins as an example of the use of proteins as tumour markers.</p> <p><b>Molecular genetics in disease.(3 hours)</b> This topic introduces the role of molecular genetics in the investigation and understanding of disease processes such as in-born-errors of metabolism and cancer.</p>
<p>Contact Hours/Scheduled Hours</p>	<p><b>Lectures:</b> This module will be delivered in discrete sections, following the subject areas outlined in the syllabus. Each topic area will be introduced with underpinning lectures followed by a series of tutorials where extensive use of case studies will be made.</p> <p><b>Tutorials:</b> Students will be supplied with a case study prior to the tutorial session. Tutorials will use indicative lists of questions to guide student learning. <u>It is expected that the case study will be completed before the tutorial.</u> Therefore, the tutorial will engage active discussion on individual and group findings. <b>Case studies will be part of the final year assessment and therefore attendance at tutorials is strongly encouraged. (1 x 1.5 hour sessions with smaller groups.</b></p> <p>Additional Tutorials for MSc students. A further 1 hour tutorial session will be given to address extended reading and assessment (every week), in support of each subject area.</p>
<p>Teaching and Learning Methods</p>	<p>This module will be delivered in discrete sections, following the subject areas outlined in the syllabus. Each topic area will be introduced with underpinning lectures followed by a series of tutorials where extensive use of case studies will be made. The students will have to prepare pre-set questions on each case-study in order to discuss the case in the tutorial session. Further questions will be given to aid student centered learning. Particular areas of the syllabus will be further developed in additional tutorials allowing the students to further explore these areas and to critically review current research in these areas.</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.</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</p>

	<p>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, in the Research Methods and Practical Skills module 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>Module leaders will give you a clear indication of any essential reading, and point you towards the appropriate textbooks and journals for their discipline. This will usually be in the form of a reading list in the module guide; the indicative list on this module specification is as it states indicative as the relevant available books and journals can change regularly – and the module specification is a document written only once when a module is modified and can last for many years. So it is important that you refer to the reading list for your specific year group as the definitive document.</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, and to the library catalogue. Many resources can be accessed remotely.</p>
Indicative Reading List	<p>Textbooks: The latest editions of:</p> <p><b>The recommended module text is:</b></p> <ul style="list-style-type: none"> <li>• “Clinical Chemistry.” Marshall W.J. &amp; Bangert S.K. (Mosby)</li> </ul> <p><b>Other textbooks available in the library include:</b></p> <ul style="list-style-type: none"> <li>• “Textbook of Biochemistry with Clinical Correlations.” Devlin T.M. (Wiley-Liss).</li> <li>• “Varley’s Practical Clinical Biochemistry.” Gowenlock A.H. (Crc Pr I Llc)</li> <li>• “Fundamentals of Clinical Chemistry.” Tietz N.W. (Elsevier Saunders).</li> <li>• “Lecture Notes on Clinical Biochemistry.” Whitby L.G., Smith A.F., Beckett G.J. and Walker S.W. (Blackwell Science (UK)).</li> <li>• “Clinical Chemistry, Principles, Procedures, Correlations.” Bishop, M.J., Fody, E.P. and Schoeff, L. (Lippincott Williams &amp; Wilkins).</li> <li>• “Clinical Biochemistry, An illustrated colour text.” Gaw A., Murphy M.J., Cowan R.A., Denis S.T., O’Reilly J., Stewart M.J. &amp; Shepherd J. (Churchill Livingstone).</li> <li>• “Medical Genetics.” Jorde L.B., Carey J.C., Bamshad, M.J. &amp; White, R.L. (Mosby).</li> <li>• “Endocrine Physiology.” Portefield, S.P. (Mosby)</li> <li>• “Biochemistry and Molecular Biology.” Elliott W.H., and Elliott D.C. (Oxford University Press)</li> </ul> <p><b>Journals</b></p> <ul style="list-style-type: none"> <li>• Annals of Clinical Biochemistry</li> <li>• British Medical Journal</li> <li>• Clinical Chemistry</li> <li>• Current Advances in Clinical Chemistry</li> <li>• Journal of Endocrinology</li> <li>• Nature</li> <li>• The Lancet</li> </ul>

- New England Journal of Medicine
- Biochemistry Online

### Part 3: Assessment

Assessment Strategy	<p>All specialist subject modules on the MSc BMS programme have a 50:50 weighting of course work to final exam. Coursework as decided by the module leader in line with the programme assessment strategy.</p> <p><b>First Attempt</b>            Component A: Examination (3 hours)</p> <p>Component B: A data interpretation exercise and a poster presentation (each carry equal weighting)</p>
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Identify final assessment component and element	<b>A1</b>	
% weighting between components A and B (Standard modules only)	<b>A:</b> <b>50</b>	<b>B:</b> <b>50</b>

First Sit	
Component A (controlled conditions) Description of each element	Element weighting (as % of component)
1. Examination (3 hours) – final assessment	100
Component B Description of each element	Element weighting (as % of component)
1. Data Interpretation	50
2. Scientific poster	50

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) Description of each element	Element weighting (as % of component)
1. Examination (3 hours)	100
Component B Description of each element	Element weighting (as % of component)
1. Extended Essay	100
<p>If a student is permitted an <b>EXCEPTIONAL RETAKE</b> of the module the assessment will be that indicated by the Module Description at the time that retake commences.</p>	