



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Clinical Biochemistry		
Module Code	USSKBL-30-3	Level	Level 6
For implementation from	2020-21		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Health & Applied Sciences	Field	Applied Sciences
Department	HAS Dept of Applied Sciences		
Module type:	Standard		
Pre-requisites	Studies in the Biology of Disease 2020-21		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Educational Aims:</b> See Learning Outcomes.</p> <p><b>Outline Syllabus:</b> The syllabus includes:</p> <p>Philosophy of clinical biochemistry/clinical utility:</p> <p>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>Enzymes:</p> <p>Examples of specific clinically relevant enzymes. Tissue damage and relationship to diagnostic use of enzymes and isoenzymes.</p> <p>Liver function/disease:</p> <p>Review of fundamental liver biochemistry. Causes of acute and chronic liver disease. Liver function tests. Differential diagnosis of jaundice and other disorders.</p>

## STUDENT AND ACADEMIC SERVICES

Disorders of detoxification and excretory mechanisms - renal:

Review of normal kidney functions. Tests of the glomerular function – renal clearance, GFR, serum creatinine and urea determinations. Outline of tests of tubular function. Renal calculi and their investigations.

Acid-base disorders:

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.

Endocrinology disorders:

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.

Toxicology and drug therapy:

Treatment of cancer using cytotoxic drugs highlighting factors which affect treatment with chemical agents.

Plasma proteins in disease:

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.

Molecular genetics in disease:

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.

Biomarkers of bone disease:

Pathogenesis of bone disorders such as osteoporosis, Paget's disease and genetic abnormalities. Biomarkers associated with these conditions to help differentiate between disorders will be discussed.

Electrolyte Imbalances:

Water, sodium and potassium distribution under normal and pathophysiological conditions.

**Teaching and Learning Methods:** Scheduled learning (online for 20/21):

Lectures:

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. Guided reading will be provided in advance of lectures and will direct the student to both preparative and supplementary information sources. Copies of all hand-outs will be available on Blackboard. A Web site has been constructed which links to some of the best available information sources on the internet. All links have been investigated for their validity and usefulness in this context.

Tutorials:

Students will be supplied with a case study (see below) prior to the tutorial session. Tutorials will

## STUDENT AND ACADEMIC SERVICES

use indicative lists of questions to guide student learning. It is expected that the case study will be completed before the tutorial. Therefore, the tutorial will engage active discussion on individual and group findings. Case studies will be part of the final year assessment and therefore attendance at tutorials will be strongly encouraged.

Poster presentation:

Students will also be required to prepare a poster presentation on a piece of current research in the area of clinical biochemistry allowing the student to critically evaluate scientific literature.

Case Studies:

Case studies will be used to provide the basis of the tutorial programme. Each case study will develop a theme outlined in one of the core lectures. Each case study will be followed by a number of questions directly relevant to that case. Also, there will be an additional set of questions, which are more wide-ranging, designed to link together other aspects of clinical biochemistry with the case. Before the tutorial, students will prepare answers to the questions and be ready to discuss their answers within small groups with the lecturer. The questions given with each case study should direct the students reading and study. In addition scheduled learning also includes asynchronous online activities such as quizzes and discussion board, all available on Blackboard.

Independent learning:

In addition to lectures and tutorials students are expected to engage in independent reading where core textbooks and journals are highlighted. This extended reading will help support student for both coursework and examination preparation, where depth and detail in each area is expected. The expected time given to this aspect is 228 hours.

Contact Hours:

The contact hours (66) are distributed broadly as follows:

44 hours of lectures

22 hours of tutorials/seminars

In addition to the described contact time, this material will be supported through online learning material, including online quizzes and technology enhanced lecture material.

Independent learning:

Using defined TEL strategies includes hours engaged with essential reading, case study preparation, assignment preparation and completion, etc.

### Part 3: Assessment

The assessment will cover the broad curriculum via an integrated poster and case study approach and a final examination.

The coursework details two elements. The first is to prepare a poster presentation on a piece of current research in the area of blood sciences allowing the student to critically evaluate scientific literature in the context of the pathogenesis of disease and current research views. The second element will feature an integrated case study, where students will critically analyse a set clinical data based around a given case history.

The final element is an online examination with a 24 hour submission window, which will assess each area using both case studies and essay type questions.

In addition to these assessments, students will be given formative feedback in lectures and tutorials.

## STUDENT AND ACADEMIC SERVICES

First Sit Components	Final Assessment	Element weighting	Description
Poster - Component B		20 %	Poster communication
Examination (Online) - Component A	✓	60 %	Written examination (24hrs)
Case Study - Component B		20 %	Case study
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	60 %	Examination (24 hours)
Case Study - Component B		40 %	Case Study (1500 words)

### Part 4: Teaching and Learning Methods

Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:	
	<b>Module Learning Outcomes</b>	<b>Reference</b>
	Interpret biomedical data in the investigation and diagnosis of disease and discuss the origin and effects of an abnormal biochemical profile	MO1
	Critically appraise the nature and diagnosis of disease in terms of abnormalities in the biochemical and molecular biological aspects of cellular process	MO2
	Discuss the relevance of biochemical, molecular biological diagnostic tests in the investigation of disease	MO3
	Interpret bold parameters that characterise selected disease states	MO4
	Critically and analytically appraise relevant scientific literature	MO5
	Present scientific information as a poster	MO6
Contact Hours	<b>Independent Study Hours:</b>	
	Independent study/self-guided study	234
	<b>Total Independent Study Hours:</b>	234
	<b>Scheduled Learning and Teaching Hours:</b>	
	Face-to-face learning	66
	<b>Total Scheduled Learning and Teaching Hours:</b>	66
	<b>Hours to be allocated</b>	300
	<b>Allocated Hours</b>	300

## STUDENT AND ACADEMIC SERVICES

Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://uwe.rl.talis.com/modules/usskbl-30-3.html">https://uwe.rl.talis.com/modules/usskbl-30-3.html</a></p>
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### **Part 5: Contributes Towards**

This module contributes towards the following programmes of study:

Biomedical Science [Sep][FT][Frenchay][4yrs] MSci 2018-19

Biomedical Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19