

Module Details	
Module Title	Clinical and Analytical Biochemistry
Module Code	BIS5013-B
Academic Year	2020/1
Credits	20
School	School of Chemistry and Biosciences
Subject Area	Biomedical Science
FHEQ Level	FHEQ Level 5
Pre-requisites	CLS4004-C, BIS4007-B
Co-requisites	N/A

Contact Hours	
Type	Hours
Online Lecture (Synchronous)	20
Online Tutorials (Synchronous)	6
Practical Classes or Workshops	5
Directed Study	160
Learning Objects Interaction	10

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims
To develop an understanding of the biochemical causes and consequences of disease and some of the common analytical techniques used in the Biomedical Sciences. To develop skills in the use, presentation and interpretation of analytical data.

Outline Syllabus

Introduction to clinical biochemistry and external and internal standardisation; inter-laboratory standardisation. Absorbance, fluorescence, luminescence and infrared spectra. Organ function tests (e.g. liver and cardiac function tests) and diagnostic enzymology. Lipoprotein and cholesterol relationship with disease and lipoprotein analysis. Amino acids, pH and pKa. Electrophoresis techniques including isoelectric focussing and SDS PAGE. Introduction to mass spectrometry and clinical uses. Diagnosis of type I and type II Diabetes Mellitus, treatment and monitoring of the condition. Column chromatography, high performance liquid chromatography, ion exchange, exclusion and affinity chromatography. Biochemical effects of malignant disease and tumour markers. Acid base balance, electrolyte balance, parenteral fluids and nitrogen balance. Renal function and the biochemical effects of trauma.

Learning Outcomes

Outcome Number	Description
01	Recognise and describe the principles and application of laboratory protocols relevant to a range of routine investigations and be able to analyse and evaluate the information collected (HCPC standard 14).
02	Describe and explain how a disease is caused at the biochemical level, why that causes the symptoms observed and what analytical methods are employed for diagnosis and prognosis of the patient.
03	Conduct appropriate laboratory investigations safely and skilfully.
04	Be able to audit, reflect on and review practice (HCPC standards 14, 11/12).
05	Recognise the need for effective self-management of workload and resources and be able to practise accordingly and be able to work, where appropriate, in partnership with others (HCPC standards 1, 9).
06	Be able to maintain records appropriately (HCPC 10). Establish and maintain a safe practice environment (HCPC 15) and effectively use research and reasoning to complete problem solving (HCPC standard 14).

Learning, Teaching and Assessment Strategy

Information outlining the knowledge and understanding required of this module is delivered in lectures and supplementary information in the form of quizzes and multiple choice questions is provided via the virtual learning environment (VLE) to promote autonomous learning. This information is reinforced in online workshops related to material covered in the lectures, using case studies and data analysis to develop analysis and interpretation skills. The practical sessions also provide the opportunity to gain experience in use of clinical and analytical biochemical methods and analyse and evaluate data that is summatively assessed. During directed study hours, students are expected to undertake reading to consolidate and expand on the content of formal taught sessions; research and prepare for assessments; revise material from formal taught sessions; and undertake specific elements of reading as directed. Private study will be facilitated and supported via the use of the VLE which will provide coursework advice and feedback, and revision support. Reassessment of failed elements will be as per the initial method of assessment. Where reassessment of the practical element is required, students will be given a data set to analyse.

Mode of Assessment				
Type	Method	Description	Length	Weighting
Summative	Examination - practical/laboratory	Laboratory practical - assessed online coursework test	1 hour	40%
Summative	Examination - Open Book	Online Assessment: MCQ 1 calculation 1 short essay	2 hour	60%
Formative	Coursework	Group activities in online workshop (tutorial) sessions (LO 1, 2, 4-6) Practice short essay	6 hours	N/A

Reading List
To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

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