UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Chemistry
Module Code	CLS3004-B
Academic Year	2022/3
Credits	20
School	School of Pharmacy and Medical Sciences
FHEQ Level	RQF Level 3

Contact Hours	
Type	Hours
Lectures	27
Tutorials	25
Directed Study	148

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Academic Year

Module Aims

To reinforce basic knowledge of general chemistry and extend it to cover more advanced aspects of bonding and organic chemistry.
To extend this knowledge-base through the study of the concepts of enthalpy changes; general and aqueous equilibrium; acids, bases, pH and buffers; and simple organic reactions with reference to a biological or medical context.

Outline Syllabus

Material is illustrated using examples from medicine, human metabolism and physiology. Students in a typical year should expect to cover the following topics:

Atomic structure. Chemical equations. Mole concept, relative atomic/molar masses, molar volume, reacting masses, molar conc. Intramolecular bonding. Intermolecular bonding. Principles of organic nomenclature and organic chemistry. Organic functional groups. Isomerism. Enthalpy and entropy changes. Hess' Law. Rate equations. Catalysts including enzymes. Activation energy. Equilibrium, equilibrium constant (Kc), Le Chatelier's Principle. Effect of concentration, pressure and temperature. Strong and weak acids and bases. Acid ionisation constant of weak acids. Buffer solutions. Calculation of pH. Behaviour of ionisable functional groups. Principles of organic reaction mechanisms. Simple reactions of alkenes, alcohols, carboxylic acids and amines. Structure determination of organic molecules.

Learning Outcomes	
Outcome Number	Description
LO1	Describe the key features of the structure of atoms, chemical bonding, molecular structure and organic reactions, and apply this knowledge to explain the properties of biomolecules, metabolic processes and medical treatments.
LO2	Explain the factors affecting the energy changes, rate and equilibrium position of a reaction, and their relevance to biochemical reactions in the human body.
LO3	Apply principles of physical chemistry to solve numerical problems involving chemical quantities, thermochemistry, reaction kinetics, equilibria, and acid-base chemistry.
LO4	Apply knowledge of organic chemistry to identify reagents and products of reactions and identify key spectroscopic features of molecules.
LO5	Apply scientific concepts, use logical thinking and numeracy skills to solve a range of problems.

Learning, Teaching and Assessment Strategy

The knowledge and understanding required in LO1-4 will be delivered in lectures. Problem-solving tutorials will be used to reinforce the taught component and practise problem solving (LO5) using a mixture of exam-style questions, and questions requiring written answers giving a structured approach to problem solving.

Formative assessment in the form of timed Canvas (VLE) quizzes for completion will be made available throughout the year. Feedback during tutorials and instant (computer-marked) formative quizzes will enable you to monitor your progress. You will use your independent study time to access suggested resources for further reading, to practise problem-solving and to monitor and direct your own learning.

Knowledge of material covered in each semester, and scientific problem-solving will be assessed by computer-based assessments at the end of each semester.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Online MCQ Examination	Semester 1: Computer-based examination (60 minutes) multiple-choice questions	40%
Summative	Online MCQ Examination	Semester 2: Computer-based examination (90 minutes) multiple-choice questions and short answers assessment	60%
Formative	Classroom test	Continuous formative assessment using Canvas quizzes, multiple choice and short answer where appropriate.	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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