UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Applied Life Sciences
Module Code	BIC3017-B
Academic Year	2022/3
Credits	20
School	UoB International College
FHEQ Level	RQF Level 3

Contact Hours	
Type	Hours
Directed Study	140
Lectures	45
Laboratories	15

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Non-Standard Academic Year
BDA	University of Bradford / Semester 3

Module Aims

This module aims to develop the students' knowledge and understanding of key topics in Biology and Chemistry, building on modules studied earlier in the programme. There are further opportunities to work on practical skills. An additional focus is on applied areas, considering the role and responsibilities of science to and within society.

Outline Syllabus

Biology; Physiology - Students consider the muscular/skeletal system, the cardiovascular system, organisation of the human circulatory system, cardiac structure and blood flow and distribution; the respiratory system, including lung structure, central and peripheral nervous and chemical regulation of respiration, oxygen transport and carbon dioxide elimination; the digestive system, urine formation and the elimination of nitrogenous waste; the endocrine system and production and function of hormones; the reproductive system, menstrual cycle, birth and lactation.

Ecology - With particular reference to human ecology and eco-systems; energy and the eco-system; human actions and the eco-system; pollution and conservation

Genetics - Development of the concept of the gene; heredity and genetics; genetic change and variation; evolution; gene action and gene technology; genetic profiling and genes affecting health and longevity

Chemistry; Equilibria - Dynamism of equilibria. Application of Le Chatelier. Kc and Kp. Acid-based - Bronsted Lowry theory, weak and strong acids and bases. pH, Ka, Kw. Principles of acid-based titrations. Indicators, buffers.

Kinetics - Factors affecting reaction rate. Explanations using collision theory. Orders, simple treatment of the Arrhenius equation. Thermodynamic and kinetic stability. Mechanistic studies, experimental methods. Catalysis.

Organic Chemistry - Homologous series, nomenclature, structural, geometrical and optical isomerism. Classification of organic reactions. Simple reactions, of alkanes, alkenes, arenes, halogenoalkenes, alkanois, phenois, carbonyls, carboxyls and derivatives, ethanol chloride, amines, nitriles, amino acids. Organic mechanisms. Organic analysis. Synthetic pathways. Some applied organic chemistry. Fragmentary patterns in organic mass spectroscopy. Interpretation of simple, infra-red spectra.

Impact of Chemistry on Society - Social, economic, technological and environmental impact. Pharmaceutics and Pharmacology - Chemistry of the drug industry.

Learning Outcomes

Outcome Number	Description
1	Describe the functional properties of the cardiovascular and circulatory systems, and explain they influence the organisation of other major physiological systems.
2	Describe the digestive processing of the major nutrients and outline nutrient metabolism in mammals.
3	Explain how chemical reactions work and describe the main factors which affect them, with particular reference to equilibria including acid-base equilibria.
4	Describe important organic molecules.
5	Apply basic techniques in laboratory work in Biology and Chemistry with emphasis on good laboratory practice and safety.
6	Explain the practical applications of life sciences in real-life situations.

Learning, Teaching and Assessment Strategy
The summative assessment consists of two parts. Evidence for part 1, laboratory reports, is collected during the module. The students will take part in two practical sessions (one Biology, one Chemistry) which will be assessed as contributing to the students' final mark for the module. The second part of the summative assessment consists of an unseen examination.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Coursework - Written	Laboratory reports on two sessions, one in Biology, the other, Chemistry (1000 words)	40%
Summative	Examination - Closed Book	Unseen examination covering topics delivered in the module (2 hrs)	60%

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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