University of the West of England
BRISTOL

MODULE SPECIFICATION

Part 1: Information			
Module Title	Core Chemistry		
Module Code	USSKNE-15-1	Level	1
For implementation from	September 2018		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Health and Applied Sciences	Field	Applied Sciences
Department	Applied Sciences		
Contributes towards	FdSc Biological Laboratory Sciences		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

This module will cover the following topics within the area of environmental science:

Structure and bonding:
Why do atoms combine into complex molecules and materials, and how does this influence their chemical and physical properties? Chemical combinations - origins of ionic and covalent bonding related to atomic structure and the Periodic Table; electronegativity, polar bonds and intermolecular forces. Naming and structures of important organic and inorganic compounds.

Chemical reactions:
Nature and order of chemical reactions. Redox and acid-base reactions. Neutralisation and titration procedure. Introduction to stability of atoms, molecules and mixtures. Enthalpy of combustion. Factors influencing the rate of a chemical reaction. Experimental and mathematical methods for rates of reactions.

Organic chemistry:
Identifying organic functional groups and ring systems. Synthesis and reactivity of aromatic and non-aromatic ring systems. Fundamental stereochemistry in the context of drugs and biochemistry - structural isomers and stereoisomers. Common synthetic reactions in organic synthesis.

This module aims to deliver specialist knowledge through taught lectures, inductive tutorials, seminars and practical sessions to promote application of knowledge acquired, analytical and problem-solving skills. Student learning will be further supported through both UCW and UWE E-Learning Environment, with provision of materials and activities to guide independent study.

Independent learning includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc. These sessions constitute an average time per level as indicated in the table below.

Part 3: Assessment

The assessment strategy has been designed to support and enhance the development of subject-based knowledge and practical skills, whilst ensuring that the learning outcomes are achieved.

The controlled component is comprised of a 2 hour practical exam. This assessment will include understanding of redox and acid-base reactions and application of problem-solving and mathematical skills to the titration procedure to determine unknown concentration of a solution. In addition, it will provide a valuable learning experience through demonstrating a range of practical skills and applying scientific knowledge which will be of benefit when progressing to year 2.

The coursework is comprised of a portfolio of practical reports on experiments carried out during this module. This assessment will provide a valuable practical learning experience through practical laboratory sessions.

Opportunities for formative assessment and feedback are built into teaching and practical sessions, through discussion and evaluation of current research and review of past exam papers. Students are provided with formative feed-forward for their exam through a revision and exam preparation session prior to the exam and through the extensive support materials supplied through the E-Learning Environment.

All work is marked in line with the UWE generic assessment criteria and conforms to university policies for the setting, collection, marking and return of student work. Assessments are described in the module handbook that is supplied at the start of module.

Identify final timetabled piece of assessment (component and element)	**Component A**	
% weighting between components A and B (Standard modules only)	**A:** **50**	**B**: **50**

First Sit

Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**
1. Practical exam (2 hours)	100

Component B **Description of each element**	**Element weighting** **(as % of component)**
1. Portfolio of evidence workbook	100

Resit (further attendance at taught classes is not required)

Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**
1. Practical Exam (2 hours)	100

Component B **Description of each element**	**Element weighting** **(as % of component)**
1. Portfolio of evidence workbook	100

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will be able to:

- give examples to illustrate how chemical structure and bonding relates to properties in molecules (B)
- use ideas of enthalpy as a predictive tool to determine yields of reactions (B)
- analyse simple kinetic data and relate this analysis to reaction mechanisms (B)
- understand nomenclature of organic molecules and common synthetic strategies relevant to drugs (B)
- apply your understanding of neutralisation and acid-base reactions to the titration procedure (A,B)
- apply problem-solving and mathematical skills to the analysis of experimental data (A)
- carry out fundamental practical techniques encountered in experimental chemistry, analyse, evaluate and present data in a controlled environment (components A).

Key Information Sets Information (KIS)

Key Information Set - Module data

Number of credits for this module 15

Contact Hours

Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours
150	60	90	0	150

Total Assessment

The table below indicates as a percentage the total assessment of the module which constitutes a;

Written Exam: Unseen or open book written exam
Coursework: Written assignment or essay, report, dissertation, portfolio, project or in class test
Practical Exam: Oral Assessment and/or presentation, practical skills assessment, practical exam (i.e. an exam determining mastery of a technique)

Total assessment of the module:	
Written exam assessment percentage	0%
Coursework assessment percentage	50%
Practical exam assessment percentage	50%
	100%

Reading List

The following book is recommended as it covers most of the module material at an appropriate level.

- W.H. Freeman, Lewis, R. and Evans, W. (2011) *Chemistry*. 4th ed. Basingstoke: Palgrave Macmillan

Extensive notes will be provided via blackboard on the scientific topics. Links to useful and credible websites will also be provided.

The students are also advised to consult the basic scientific texts in UCW, Frenchay and Glenside libraries, of which the following is a representative sample:

	The latest editions of: • Johll, M E, (2009) *Investigating Chemistry, a Forensic Science Perspective*.2nd ed. • Crowe, J. and Bradshaw, T. (2010) *Chemistry for the Biosciences*.2nd ed. Oxford: Oxford University Press. • Volhardt P. Schore N., (2009) *Organic Chemistry - structure and function*. 6th ed. London: Freeman Palgrave Macmillan.

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