University of the West of England
BRISTOL

CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Skills for Biosciences					
Module Code	USSKA6-30-1		Level	1	Version	1
Owning Faculty	Health & Applied Sciences		Field	BBAS		
Contributes towards	BSc Biological Sciences					
UWE Credit Rating	30	ECTS Credit Rating	15	Module Type	Standard	
Pre-requisites	None		Co- requisites	None		
Excluded Combinations	None		Module Entry requirements	N/A		
Valid From	September 2014		Valid to	September 2020		

CAP Approval Date	28/03/2014

Part 2: Learning and Teaching	
Learning Outcomes	On successful completion of this module students will be able to: • perform basic scientific calculations relevant to the biological sciences (A,B) • undertake a range of standard laboratory procedures and flied surveys in a safe manner (B) • present, analyse and interpret laboratory and field data using appropriate mathematical, statistical and communication skills (B) • use statistical methods to describe datasets using a variety of techniques (A,B) • estimate the uncertainties in the results of scientific measurements (A,B) • understand the need for developing key graduate skills in addition to subject based proficiency (B) • use resources that will support their research, problem solving and study skills throughout their undergraduate course (B)
Syllabus Outline	This is a skills based module and aims to support and enhance the development of both subject-based and generic key skills. Specifically this module will introduce the following: **Field and laboratory skills** • Basic laboratory skills such as making up solutions, pipetting, titrating and use

	of microscopes • Basic field sampling techniques such as the use of quadrats; sampling methodologies; time management and team work • Additional activities may include: spectrophotometry; photometry; use of HPLC; acid base theory; buffer solutions **Study skills** • Introduction to study skills and generic graduate skills • The evaluation of skills and planning personal development • Introduction to independent learning and being a self-manager • Activities may include: academic reading; literature and information searching; scientific writing; referencing & plagiarism; use of appropriate software; time management; understanding and using feedback; formative assessment and feedback from staff and peers; revision techniques and exam preparation; self evaluation and reflection; planning ahead **Analytical skills** Modelling scientific systems • Scientific equations and formulae • Exponential and logarithmic functions • Equations of growth and decay • Descriptive statistics • Use of the normal distribution • Confidence intervals Data analysis • Hypothesis testing • Appreciation of variability in scientific data and experimental uncertainty • Testing of hypotheses and making decisions, for example the use of t-tests and χ^2 tests • Recording, analysing and interpreting scientific data using IT software such as Excel & Minitab Students will study topics comparable to the material covered in the European Computer Driving Licence - Level 1 (Essentials). UWE is a test centre for ECDL and the Faculty TEL manager has confirmed that students on this programme will be accommodated.
Contact Hours	The contact hours (72) are distributed as follows: 21 hours of lectures, 24 hours of tutorials, 15 hours of laboratory practicals and 12 hours of computer practicals.
Teaching and Learning Methods	This is a module about developing skills and so a variety of teaching and learning approaches will be employed that include lectures, tutorials, laboratory work and computer practical tutorials, A significant proportion of this module covers the development of problem solving numeric and data analysis skills. Technology enhanced learning is therefore essential to support the teaching of these skills. The module will be delivered using a mixture of whole group (lectorials) and small tutorial group sessions. Support for student learning will be given through weekly lectorials/tutorials which will be integrated with the online self-assessment tests and online video support to ensure focussed help can be given to those students who need help in the particular areas. This introduces students to the concept of using technology to enhance learning (TEL). Students will develop IT and data analysis skills through computer-based workshops. This will be re-enforced by the need of students to complete the European Computer Driving Licence (ECDL) Part 1. Resources for this component also include direct tutorial material, and

	references to published material, software, internet and intranet resources. The development of numeric and data analysis skills will be further supported through timetabled PAL (Peer Assisted Learning) sessions, in which second year students (who are on the same degree course as those first year students taking this module) provide guidance. The development of field and laboratory skills will be supported through a combination of lectures, which will include short audio/visual presentations, tutorials, which will require preparation and follow-up work to be done by the student and, crucially, laboratory practicals and field work where students will get valuable hands on experience of field sampling methods, laboratory techniques, data collection and analysis. The development of study skills will be supported by the students' PAT (Personal Academic Tutor) in group sessions which will involve direct teaching, group discussions and peer assessment of study skill generated material. This area of development will be further supported by UWE's dedicated online study skills resources http://www1.uwe.ac.uk/students/studysupport/studyskills.aspx Student learning will be further supported through the University's E-Learning Environment, Blackboard. Students are expected to spend 72 hours on scheduled learning and 228 hours on independent learning. Independent learning will take the following forms with an approximate indication of time required for each: • Essential reading to support acquisition of knowledge and completion of problem solving and laboratory skills exercises relating to lectures and practical classes – 108 hours • Preparation and submission of Integrated assignment – 8 hours • Preparation and submission of Portfolio – 40 hours • Revision and preparation for exam, including support tutorials – 72 hours **Scheduled learning** includes lectures, tutorials, practical computer classes and laboratory workshops. **Independent learning** includes hours engaged with essential reading, assignment preparation and completion etc.
Key Information Sets Information	Key Information Sets (KIS) are produced at programme level for all programmes that this module contributes to, which is a requirement set by HESA/HEFCE. KIS are comparable sets of standardised information about undergraduate courses allowing prospective students to compare and contrast between programmes they are

Key Information Set - Module data

Number of credits for this module				30
Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours
300	72	228		300

	The table below indicates as a percentage the total assessment of the module which constitutes a - **Written Exam**: One unseen written exam **Coursework**: One integrated assignment and one portfolio of laboratory work sheets, data analysis of field work and evidence of study skills development

Total assessment of the module:	
Written exam assessment percentage	40%
Coursework assessment percentage	60%
	100%

Reading Strategy	All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely. Students will be presented with opportunities within the curriculum to develop their information retrieval and evaluation skills in order to identify such resources effectively. Any **essential reading** will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given or sold a print study pack or be referred to texts that are available electronically, etc. This guidance will be available either in the module handbook, via the module information on Blackboard or through any other vehicle deemed appropriate by the module/programme leaders. If **further reading** is expected, this will be indicated clearly. If specific texts are listed, a clear indication will be given regarding how to access them and, if appropriate, students will be given guidance on how to identify relevant sources for themselves, e.g. through use of bibliographical databases. A detailed reading list will be made available through relevant channels, e.g. module handbooks, Blackboard, etc.
Indicative Reading List	The most recent editions of: Currell, G. and Downman, A.A. *EssentialMathematics and Statistics for Science*. Chichester: Wiley-Blackwell. Students will use a dedicated website associated with this text, which gives access to additional learning resources including video feedback. Millican, P. and Heritage, J. *Studying Science: A Guide to Undergraduate Success.* New Delhi: Viva Books. Jones, A., Reed,R., & Weyers, J. *Practical Skills in Biology*. Harlow: Pearson Education. Cottrell, S. *The Study Skills Handbook*. Basingstoke: Palgrave Macmillan. Cann, A. *Maths from Scratch for Biologists*. New York: John Wiley. Dytham, C. *Choosing and Using Statistics.* Oxford: Blackwell.

Part 3: Assessment	
Assessment Strategy	The Assessment Strategy has been designed to support and enhance the development of both subject-based and generic key skills, whilst ensuring that the modules Learning Outcomes are attained. The coursework comprises two elements. The first is the Integrated assignment which will provide an opportunity for students to demonstrate their ability to apply basic problem solving skills to unseen problems and evidence their skills in approaching them appropriately. The second element is a portfolio. Students will be given instruction on the content of this portfolio which will contain examples of both study skills and subject skills such as: statistical analysis of laboratory data; interpretation and discussion of laboratory data; ECDL level 1 certificate; evidence of referencing; examples of poster presentation and a skills evaluation. The controlled component is a three hour open book exam. The exam will allow students to undertake a suitable range of activities such as: discuss various field and laboratory techniques; undertake calculations; process and manipulate field and laboratory data; draw and display data in graphs and other forms. This will test a range of the learning outcomes. The exam format is utilised as it replicates the world of work where samples and data need to be analysed and interpreted correctly within a short deadline. Formative feedback is available to students throughout the module through group discussions particularly in tutor group sessions. Students are provided with formative feed-forward for their exam through a revision and exam preparation session prior to the exam and through support materials supplied through Blackboard.

Identify final assessment component and element		
% weighting between components A and B (Standard modules only)	**A:** **40%**	**B**: **60%**

First Sit	
Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**
1. EX1 Examination (3 hours)	100%
Component B **Description of each element**	**Element weighting** **(as % of component)**
1. Integrated assignment	20%
2. Portfolio	80%

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**
1. EX2 Examination (3 hours)	100%

Component B **Description of each element**	**Element weighting** **(as % of component)**
1. Integrated assignment (including Portfolio)	100%
If a student is permitted an **EXCEPTIONAL RETAKE** of the module the assessment will be that indicated by the Module Description at the time that retake commences.	