University of the West of England
BRISTOL

CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Gene Control					
Module Code	USSKBG-30-3		Level	3	Version	1
Owning Faculty	Health and Applied Sciences (HAS)		Field	BBAS		
Contributes towards	BSc (Hons) Biological Science BSc (Hons.) Forensic Science (Biology)					
UWE Credit Rating	30	ECTS Credit Rating	15	Module Type	Standard	
Pre-requisites	One of the following; USSKAL-30-2 Molecular Biology USSKAM-30-2 Genes & Biotechnology USSKB7-15-2 Molecular Genetics		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: • understand and discuss the principles underlying cell signalling events (assessed in Component A); • discuss specific signal transduction pathways, including those involving cAMP, cGMP, inositol phosphates, nitric oxide and reactive oxygen species and calcium ions (assessed in Component A); • discuss the role and mechanisms of action of cell receptors (assessed in Component A); • discuss the mechanisms which underpin circadian rhythms (assessed in Component A); • understand and discuss the processes of RNA processing (assessed in Component A); • discuss the roles and mechanisms behind epigenetics (assessed in Component A); • find and use up-to-date literature (assessed in Component A and B); • communicate elements of gene control and cell signalling in written format

	(assessed in Component A and B); • to understand data which describes elements of gene control and cell signalling (assessed in Component A and B). • to understand elements of bioinfomatics (Component A and B).
Syllabus Outline	Principles underlying cell signalling events; • The production of signals, their perception and the responses they evoke will be discussed in a generic setting to impress on the commonality of signalling principles. Specific signal transduction pathways, including those involving: • cAMP, adenylyl cycles and G proteins • cGMP, cyclases and phosphodiesterases • inositol phosphates, lipid signalling, how these elements integrate into signalling • nitric oxide, reactive oxygen species and hydrogen sulfide signalling will be discussed • calcium ions, calmodulin, calcium sequestration, calcium ion oscillations and waves. Role and mechanisms of action of cell receptors. • How ligands are perceived, receptor changes and the transition of the signal into or through the cell. Intracellular receptors will also be discussed. Mechanisms which underpin circadian rhythms. Processes of RNA processing. Roles and mechanisms behind epigenetics. Bioinformatics and how it informs cell signalling and gene control. • Including the identification of protein domains and functions regions pertinent to signalling events, such as SH2/3 domains, EF hands etc.
Contact Hours	The contact hours (72) are distributed as follows: • 66 hours lectures • 3 hours bioinformatics tutorials • 3 hours of revision sessions
Teaching and Learning Methods	The module will be delivered as mainly as lectures with some bioinformatics sessions and revisions opportunities. Teaching will be underpinned by the research of the department and also wider literature to keep the content current and relevant. Data interpretation and critical analysis of the research literature will help to prepare the students as ready-and-able graduates and prepare them for post-graduation. **Scheduled learning** • Scheduled contact time is structured around a series of lectures that introduce the key concepts of the topic under discussion. • Bioinformatics sessions will be in the forms of computer-based tutorials. • Revision session will be based around writing targeted essay plans, towards the end of the module. **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. The module will be supported by Blackboard.

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 interested in applying for.

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	0	300

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

Written Exam: Unseen written exam.

Coursework: Written assignment or essay, and a data interpretation exercise based on a recently published paper.

Please note that this is the total of various types of assessment and will not necessarily reflect the component and module weightings in the Assessment section of this module description:

Total assessment of the module:	
Written exam assessment percentage	60%
Coursework assessment percentage	40%
Practical exam assessment percentage	0%
	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.
Indicative Reading List	*The following list is offered to provide validation panels/accrediting bodies with an indication of the type and level of information students may be expected to consult. As such, its currency may wane during the life span of the module specification. However, as indicated above, CURRENT advice on readings will be available via other more frequently updated mechanisms.* Books: The most recent edition of: • Hancock, J.T. *Cell Signalling*. Oxford: Oxford University Press. • Elliot, D. and Ladomery M. *Molecular Biology of RNA*. Oxford: Oxford University Press. • Helmrich, E.J.M. *The Biochemistry of Cell Signalling*. Oxford: Oxford University Press. • Latchman, D. *Gene Expression*. Oxford: Nelson Thornes. • Lesk, A.M*. Introduction to Genomics*. Oxford: Oxford University Press. • Russell, P.J. *iGenetics – A Molecular Approach*. Harlow: Pearson Education. • Dale, J.W. and von Schantz, M. *From Genes to Genomes*. Chichester: Wiley • Lodish *et al*. *Molecular Cell Biology*, New York: W.H. Freeman. • Alberts *et al*. *Molecular Biology of the Cell*, Abingdon: Garland Publishing. • Harvey A. *Cancer Cell Signalling*, New York: Wiley. • Plus appropriate use of relevant primary reference journals and www based resources; Trends in… series of journals Current Opinion… series of journals Frontiers in… series of journals Nature Nature Reviews PLoS Etc

Part 3: Assessment	
Assessment Strategy	The Assessment for this module is designed to test the breadth and depth of students' knowledge, as well as their ability to analyse, synthesize and summarise information critically, including published research and data from the 'grey' literature. The controlled component is a written exam. The exam will be 3 hours duration which is consistent with the Department's assessment strategy for Level 3 modules. This assessment allows students to demonstrate both their ability to research, prioritise information and produced a structured, evidence based answer. This assessment links directly to requests from employers as they require graduates proficient at researching and scientific writing under pressure. The examination provides students with the opportunity to demonstrate their knowledge and understanding of the key concepts and paradigms associated with the subject matter, to use case studies and other evidence critically to support their arguments. The written assignment provides the opportunity for the student to complete an in-depth analysis of selected topic from the module syllabus by critically reviewing published research. The second assignment will be a problem based data interpretation that allows the students to interpret data from a recently published paper and discuss the significance and relevance of the data presented. Opportunities for formative assessment and feedback are built into the assignments and review of past exam papers. All work is marked in line with the Department's Generic Assessment Criteria and conforms to the 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 assessment component and element	**Component A (exam)**	
% weighting between components A and B (Standard modules only)	**A:** **60%**	**B**: **40%**
First Sit		
Component A (controlled conditions) **Description of each element**	**Element weighting** (as % of component)	
1. Exam (3 hours)	100%	
Component B **Description of each element**	**Element weighting** (as % of component)	
1. Written Assignment	50%	
2. Data interpretation	50%	

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions)	**Element weighting**

Description of each element	**(as % of component)**
1. Exam (3 hours)	100%
Component B **Description of each element**	**Element weighting** **(as % of component)**
1. Written Assignment	50%
2. Data interpretation	50%

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.