University of the West of England
BRISTOL

ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Cell Signalling					
Module Code	USSKB4-15-2		Level	2	Version	2
Owning Faculty	Health and Applied Sciences		Field	Department of Biological, Biomedical and Analytical Sciences		
Contributes towards	BSc (Hons) Biomedical Sciences (Clinical) Block Release Route) BSc (Hons) Biomedical Sciences (including Clinical)					
UWE Credit Rating	15	ECTS Credit Rating	7.5	Module Type	Standard	
Pre-requisites	Cell Biochemistry and Genetics (USSKA4-30-1)		Co- requisites	None		
Excluded Combinations	None		Module Entry requirements	N/A		
Valid From	September 2014 September 2017 (v2)		Valid to	September 2020		

CAP Approval Date	28/03/2014 01/02/2017 (v2)

Part 2: Learning and Teaching	
Learning Outcomes	On successful completion of this module students will be able to: • understand and discuss the general principles underlying cell signalling events in a range of organisms (assessed in Component A); • discuss specific signal transduction pathways, including those involving cAMP, cGMP, G proteins, inositol phosphates and calcium ions (assessed in Component A); • discuss the role and mechanisms of action of cell receptors (assessed in Component A); • discuss the role of signalling pathways in specific diseases (assessed in Components A and B) • find and use up-to-date literature (assessed in Component A and B); • communicate elements of cell signalling in written format (assessed in 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. Examples will be drawn mainly from mammalian systems, but commonalty to systems in other eukaryotes will be emphasised. Cell-cell signalling, such as endocrine, paracrine and autocrine, along with gap-junctions, will be covered, leading to discussion of hormones, cytokines and growth factors. • Each signalling pathway and type of signalling will be discussed with respect to their roles in health and in specific diseases

	Specific signal transduction pathways, including those involving: • cAMP, adenylyl cycles and G proteins, with discussion of the control of glycogen metabolism, cholera, pertussis toxin and cancer and any other relevant diseases • cGMP, cyclases and phosphodiesterases, and the action of drugs • inositol phosphates, lipid signalling, how these elements integrate into signalling. The recycling of inositols will be discussed. • calcium ions, calmodulin, calcium sequestration, calcium ion oscillations and waves. • electrical excitability • neuronal signalling and the role of neurotransmitter signalling in mental illness 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 which respond to pharmaceuticals such as steroids will also be discussed.
Contact Hours	The contact hours (36) are distributed as follows: • 18 hours lectures • 6 hours of practical classes • 9 hours tutorial sessions • 3 hours of revision sessions
Teaching and Learning Methods	The module will be delivered as mainly as lectures with some practical classes, tutorial sessions and revisions sessions. Teaching will be underpinned by research of the department and wider literature to keep the content current and relevant. **Scheduled learning** • Scheduled contact time is structured around a series of lectures that introduce the key concepts of the topic under discussion. • Practical classes will be used to underpin key concepts, And provide opportunities for the students to engage in data analysis relevant to the major signalling pathways. • Tutorial sessions will cover critical analysis of published papers, and will involve discussions and group work. • Revision session will be based around writing targeted essay plans and exam strategy, based on past or specimen papers, 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				15
Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours
150	36	114	0	150

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

Written Exam: Unseen written exam, open book written exam, In-class test
Coursework: Written assignment or essay, report, dissertation, portfolio, project
Practical Exam: Oral Assessment and/or presentation, practical skills assessment, practical exam

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	50%
Coursework assessment percentage	50%
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. •Helmrich, E.J.M. *The Biochemistry of Cell Signalling*. Oxford: Oxford University Press. •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 and review journals and www based resources. These will include; Trends in… series of journals Current Opinion… series of journals Frontiers in… series of journals Nature Nature Reviews PLoS

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 2 modules. 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 examples and other evidence critically to support their arguments. The written assignment provides the opportunity for the student to critically analyse a published paper based around one of the major signalling topics covered in the lectures. Opportunities for formative assessment and feedback are built into the assignment 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:** **50%**	**B**: **50%**

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	100

Resit (further attendance at taught classes is not required)	
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	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.

FOR OFFICE USE ONLY

First CAP Approval Date	28/3/2014			
Revision CAP Approval Date	1 February 2017	Version	2	*RIA 12147*