University of the West of England
BRISTOL

ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Pathophysiology of Disease					
Module Code	USSKA7-30-1		Level	1	Version	1
Owning Faculty	Health and Applied Sciences		Field	Biological, Biomedical and Analytical Sciences		
Contributes towards	BSc Biomedical Science BSc Healthcare Science (Life Science) BSc Healthcare Science (Physiological Sciences)					
UWE Credit Rating	30	ECTS Credit Rating	15	Module Type	Standard	
Pre-requisites	None		Co-requisites			
Excluded Combinations			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: • Gain an appreciation of the science underpinning all disciplines within the Biomedical Healthcare Sciences. • Discuss the diversity of microorganisms and their ubiquity. • Explain the importance of pathogenic bacteria, viruses, fungi and parasites in the context of Medical Microbiology, including food microbiology. • Describe some of the major causes of human disease and explain their biological basis. • Describe current understanding of some topical issues in the microbiology of disease. • Explain the basis of disease response mechanisms such as inflammation, necrosis and cell death. • Discuss approaches to the investigation and diagnosis of selected disease processes.

	• Demonstrate good lab practice, basic practical and analytical skills in a simulated lab setting.
Syllabus Outline	• *Introductory microbiology*: range of size, nutrition and taxonomy of microorganisms. Eubacteria - main groups based on primary characteristics. Archaea. Fungi - main groups based on sexual reproduction. • *Food microbiology*: microbial food spoilage, food poisoning and food-borne infections. Microorganisms used by the food industry, microbial production of antibiotics and complex organic molecules. • *Microbial interactions*: intermicrobial relationships; plant-microbe interactions; animal-microbe interactions, including an introduction to the human microbiota and to pathogenicity. • *Medical microbiology - Development of the discipline*: The history of medical microbiology: a review of the "golden age" of microbiology and its leading figures; the role of the medical microbiologist today, including developments which aid in the understanding of pathogens and diagnostics. • *Medical microbiology - Diseases*: Coverage of a range of medically important bacteria, viruses, fungi and parasites: an overview of the range of diseases that microbes cause, from the trivial to the life-threatening. Vaccination. • *Current issues in Medical Microbiology* - Emerging and re-emerging pathogens: an evaluation of the re-emergence of illnesses (e.g. tuberculosis) to attempt to identify reasons for their return; consideration of the emergence of new diseases (e.g. SARS, haemorrhagic viruses). • *Haematology*. Overview of haemopoeisis, normal blood parameters and haemostasis. Outline of the aetiology and pathogenesis of anaemia, haemorrhagic and thrombotic disorders. Blood groups and blood grouping. An introduction to transfusion to transfusion medicine Introduction to anaemia, white blood cells, and their role in disease. • *Diseases of the liver and Diabetes*. Causes of liver disease. Diabetes: types, prevalence and clinical presentation. Diagnosis of these diseases. Overview of biochemical markers of these diseases. • *Carcinogenesis and Neoplasia*: Agenesis, aplasia, hypoplasia, atrophy, hypertrophy and hyperplasia. Metaplasia and dysplasia. Neoplasia – benign and malignant neoplasms. Neoplasm-host interaction. Carcinogenesis. • *Acute and chronic inflammation*: Fluid, cellular and systemic aspects of inflammation. Patterns of inflammation. Toxicity and infection. • *Cells and tissues of the immune system*. Antigens, antibodies, antigenicity, specificity, memory, tolerance and autoimmunity.

	Overview of cellular and humoral immunity. • *Cellular injury and death*. The cell as the basis of life and disease. The aims of the cellular pathology based lectures will be to provide an introduction to the study of disease in mammalian tissues by looking at necrosis and mechanisms and manifestations of sub-lethal cellular injury e.g. ischaemia. Cell death – necrosis and apoptosis. • *Cytogenetics and disease*. Clinical cytogenetics, karyotype analysis and phenotypic expression of genetic abnormality. • *Atherosclerosis*. The aetiology and pathogenesis of arterial disease, atherosclerosis.
Contact Hours	72 hrs total contact time, divided as follows: • 36 h lectures/tutorials • 36 h (12 x 3 h) practicals.
Teaching and Learning Methods	• The module will be delivered as a series of key lectures covering the topics listed above, and highlighting the important principles and concepts of each topic and to provide a framework for personal study. Self-directed study will be used to encourage students to develop their understanding of the biology and pathology of disease. These sessions will be supplemented with practical classes designed to develop good laboratory practise, an appreciation of safety issues and the requirement for care, diligence and attention to detail in clinical diagnostic work in addition to academic observations. These sessions will facilitate development of knowledge of the important principles involved in studying and working with microorganisms, and their role in causing disease, aetiology and clinical diagnosis of disease. Practical classes will include simulated case-study based investigations which will allow students to develop their analytical, interpretive and data handling skills; these skills will be assessed via a poster presentation. **Scheduled learning** includes lectures, seminars, tutorials and practical classes. Students are expected to spend 72 h on scheduled learning. **Independent learning** includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc. Total hours devoted to independent learning will be 228; the approximate time required for each activity will be: • Essential reading to support lectures/practicals in acquiring knowledge (132 h) • Preparation and submission of coursework 1 (1 - 12 h) • Preparation and submission of coursework 2 (2 – 12 h) • Revision and preparation for exams (72 h)
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 essay
Practical Exam: Oral Assessment based on poster presentation of simulated case study.

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	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 handbook, Blackboard, up-to-date in-lecture recommendations.
Indicative Reading List	Students may be expected to consult the following texts: **Microbiology and Medical Microbiology:** Willey, J.M., Sherwood, L, Woolverton, C.J. (2011) *Prescott's Microbiology* 8th ed. New York: McGraw Hill. • Madigan, M.T. (2009) *Brock Biology of Microorganisms* 13th edition Boston, Mass: Pearson. • Brooks, G.F. (2010)*Jawetz, Melnick & Adelberg's Medical Microbiology* New York: McGraw Hill. • Strelkauskas , A.J. , Strelkauskas , J. and Moszyk-Strelkauskas, D.(2010) *Microbiology: a Clinical Approach* (2010), ,New York; Abingdon: Garland Science. **Haematology:** • Bain, B.J. *A Beginner's Guide to Blood Cells*. (2004), Oxford: Blackwell Publishers. *Hugh-Jones,N.C. Lecture Notes on Haematology*.(2004) . Oxford: Blackwell Publishers. *McCann, S. Foa, Smith, and Conneally (2004) Case-Based Haematology*.. Oxford: Blackwell Publishers. **Clinical Biochemistry:** • Marshall, W.J. and Bangert, S.K. (2007) *Clinical Chemistry* 5th ed. London: C.V. Mosby. • Gaw,A. (2005) *Clinical Biochemistry:an illustrated colour text.* 3rd ed. , Edinburgh: Churchill Livingstone. **Cytogenetics and disease:** • *Turnpenny, P.D. and Ellard, S. (2004) Emery's Elements of Medical Genetics*,: Edinburgh: Churchill Livingstone. • *Connor,J.M.,Ferguson-Smith,M.A., Tobias, E. (1997) Essential Medical* Oxford: Blackwell Science (UK). **Immunology:** • *Sompayrac,L. (2002) How the Immune system works*. , Oxford: Blackwell Publishers. • *Owen, Punt, and Stranford, (2013)Kuby Immunology* 7th ed.. New York: WH Freeman and Co. **Cellular Pathology:** • *Stevens,A. and Lowe, J.* (200) *Pathology*.. New York: C.V. Mosby. • Lakhani,S.R. (2003) *Basic Pathology: An introduction to the Mechanisms of Disease* London: Arnold.

	• , Phillips,J. Murray, P. and Kirk, P. (2001) *The Biology of Disease* Oxford: Blackwell Publishers. • Crowley, L.V. (2004) *An introduction to human disease, pathology and pathophysiology correlations*Sudbery, Mass: Jones and Bartlett. On-line archives such as: • Health Protection Agency: http://www.hpa.org.uk • Centers for Disease Control and Prevention: http://www.cdc.gov/ • World Health Organization: http://www.who.int/en/

Part 3: Assessment	
Assessment Strategy	Assessment will be based on a combination of formative and summative assessments. Formative MCQ quiz assessments throughout both semesters will be used to test student learning from both lecture and practical taught material. Summative assessment will include a 500 word coursework essay during Semester 1, and a poster presentation in Semester 2. The latter will be based on the results/interpretation of an extended stimulated case study of a patient who presents with clinical symptoms, and upon whose samples a number of clinical tests and investigations will have been performed in the practical classes. The student will be required to interpret the results in order to correctly diagnose the patient's disease status. • Formative MCQ quiz test(s), covering lecture material and practical skills (in-class) • Summative essay (500 words) • Summative poster presentation based on results and interpretation of extended simulated case study. • Summative Written Examination (EX1)(3h)(controlled conditions)

Identify final assessment component and element	**Component A, EX1**	
% weighting between components A and B (Standard modules only)	**A:**	**B**:
	40	**60**
First Sit		
Component A (controlled conditions) **Description of each element**	**Element weighting (as % of component)**	
1. EX1 Written Examination (3 hours)	100	
Component B **Description of each element**	**Element weighting (as % of component)**	
1. CW1 Essay-based exercise	25	

2. CW2 Simulated case study poster presentation	75

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) **Description of each element**	**Element weighting (as % of component)**
1. EX2 Written Examination (3 hours)	100
Component B **Description of each element**	**Element weighting (as % of component)**
1. CW3 Case study	100
2.	
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.	