MODULE SPECIFICATION

Part 1: Information			
Module Title	Infection and Disease		
Module Code	USSKA7-30-1	Level	1
For implementation from	September 2019		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Health and Applied Sciences	Field	Applied Sciences
Department	Applied Sciences		
Contributes towards	This module is compulsory on all variants of the following programmes: BSc (Hons) Biomedical Science		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	N/A		

Part 2: Description

The module will be delivered as a series of key lectures covering the topics pertaining to the biological basis of disease, 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; this will be divided between:

- Essential reading to support lectures/practicals in acquiring knowledge.

- Preparation and submission of coursework.
- Revision and preparation for exams.

Part 3: Assessment: Strategy and Details

Assessment will include the following:

- Poster presentation based on interpretation of an extended simulated case study
- Essay (500 words)
- Written Examinations (1.5h each, controlled conditions)

The essay will focus on an aspect of medical microbiology, which is taught in semester one. The poster presentation 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 in semester two. The student will be required to interpret the results in order to correctly diagnose the patient's disease status.

Identify final timetabled piece of assessment (component and element)	Component A2	
% 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. Written Examination (1.5 hours), Assessment Period 1	50
2. Written Examination (1.5 hours), Assessment Period 2	50
Component B Description of each element	**Element weighting** (as % of component)
1. Poster presentation	75
2. Essay (500 words)	25

Resit (further attendance at taught classes is not required)

Component A (controlled conditions) **Description of each element**	**Element weighting** (as % of component)
1. Written Examination (3 hours). Assessment Period 3	100
Component B Description of each element	**Element weighting** (as % of component)
1. Essay (1500 words)	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.

Part 4: Learning Outcomes & KIS Data

Learning Outcomes	**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.
- 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. Aseptic techniques. Preparation of cells and tissues for microscopic examination, including fixation, dehydration, impregnation and embedding. Tissue sectioning (microtomy), basic staining techniques and visualisation techniques including molecular cytological and immunochemistry techniques. Principles and application of microscopy for diagnosis of disease

Syllabus outline:

Introductory microbiology: range of size, nutrition and taxonomy of microorganisms. The Bacteria - main groups based on primary characteristics. Archaea, fungi viruses and protozoans.

- *Microbial interactions*: introduction to the human microbiota; its role in pathogenicity and maintaining a healthy state.

- *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. Tuberculosis, streptococcal disease, influenza, nosocomial infections. Isolation and identification of microorganisms. Infections of the gastrointestinal tract, respiratory tract, STIs. Water, food and other environmental pathogens. Pathogenesis and virulence. Vaccination.

- *Current issues in Medical Microbiology* – Epidemiology and public health 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). Antimicrobial agents (anti-viral/anti-bacterial).

- *Disease.* The nature of disease and fundamentals of pathology; including age-related diseases.
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- *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 science and 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. Histopathology. Gross structure and ultrastructure of normal tissues and the structural changes which may occur during disease.

- *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. Cytopathology. Gross structure and ultrastructure of normal cells and the structural changes which may occur during disease.

- *Cytogenetics and disease*. Clinical cytogenetics, karyotype analysis and phenotypic expression of genetic abnormality.

- *Atherosclerosis*. Cholesterol synthesis. Lipoprotein metabolism. The aetiology and pathogenesis of arterial disease, atherosclerosis.

Key Information Sets Information (KIS)

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

Contact Hours

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

Written Exam: written exam(s)
Coursework: Written assignment or essay, report.

Total Assessment

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

Reading List

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:

Link to electronic reading list for microbiology topics:
https://blackboard.uwe.ac.uk/webapps/blackboard/content/listContentEditable.jsp?course_id=_303356_1&content_id=_6189705_1&mode=Q

Haematology:

- Bain, B.J. (2015) *Blood Cells: A Practical Guide*, 5th Edition.
  - Oxford: Wiley-Blackwell Publishers.
- Hugh-Jones,N.C., Wickramasinghe, S.N. and Hatton, C.S.R. (2009) . *Lecture Notes on Haematology*. 8th Edition. Wiley-Blackwell Publishers, Oxford.
- McCann, S., Foa, R, Smith, O and Conneally, E. (2004) *Case-Based Haematology*. Oxford: Blackwell Publishers.

Clinical Biochemistry:

- Marshall, W.J., Bangert, S.K. and Lapsley, M. (2012) *Clinical Chemistry* 7th ed. Mosby-Elsevier, London.
- Gaw,A., Murphy, M.J., Srivastava, R., Cowan, R.A. and O'Reilly, D.St-J. (2013) *Clinical Biochemistry:an illustrated colour text.* 5th ed. , Churchill Livingstone-Elsevier, UK..

Cytogenetics and disease:

- Turnpenny, P.D. and Ellard, S. (2017*) Emery's Elements of Medical Genetics*, 15th Edition.: Elsevier Ltd., UK.
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- Tobias, E., Connor, M. and Ferguson-Smith, M.A.,(2011) *Essential Medical Genetics, 6th Edition.* Oxford: Wiley-Blackwell Science (UK).
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Immunology:

- *Sompayrac,L. (2019) How the Immune system works*.6th Edition. John Wiley & Sons Ltd., UK.,
- *Punt, J., Stranford, S., Jones, P and Owen, J.A. (2019) Kuby Immunology* 8th ed.. New York: W.H. Freeman and Co.

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First CAP Approval Date	28//03/2014			
Revision Approval Date *Update this row each time a change goes to CAP*	PER 28/11/2018 – see PER outcome report	Version	2	