



Module Specification

Introduction to Biology of Disease

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Part 1: Information

Module title: Introduction to Biology of Disease

Module code: USSJT7-30-1

Level: Level 4

For implementation from: 2020-21

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Health & Applied Sciences

Department: HAS Dept of Applied Sciences

Partner institutions: None

Delivery locations: Frenchay Campus

Field: Applied Sciences

Module type: Standard

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: This module provides the learner with essential knowledge and understanding of the pathophysiology of disease.

Outline syllabus: Haematology: Overview of haemopoiesis, 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.

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).

Part 3: Teaching and learning methods

Teaching and learning methods: The strategy of this module is to provide a platform for students to gain an understanding of the pathophysiology of disease.

Students are expected to spend 72 hours on scheduled learning and 228 hours on independent learning. Theoretical material within the module will be presented to the students in the form of regular lectures throughout each of the semesters in the academic year. During those times of work based learning, these lectures will be

delivered online and involve a number of technological enhancements. The learning of lecture content will be reinforced through time spent in independent learning by the directed reading of recommended texts and through the use of technology enhanced learning resources that will be provided online. This online learning and engagement will be delivered through several avenues:

Synchronous online tutorials in protected learning time where the student will contribute/attend an online activity appropriate to the content at the time at which the academic will be present online to facilitate and lead this scheduled/timetabled session. This tutorial will be themed/planned.

Asynchronous discussions in the student's own time (or during protected time where permitted and appropriate) where they will engage/collaborate with other students on the course or in specified groups, and in which the academic is permitted to moderate where necessary, but is not expected to contribute.

Synchronous surgery sessions timetabled for a specific time in which the academic will be available online to answer live questions via discussion boards/blogs/collaborate or to respond to questions posted/asked prior to the session.

Interactive, online formative quizzes made available either following a particular package of knowledge exchange/learning, or in specified sessions/time periods.

Lectures delivered online through a combination of one or more of the following: visual/audio/interactivity/personal formative assessment

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.

The remainder of the independent learning time allocated to the module should be

spent preparing written assessments for submission [B1, B2], and undertaking revision for the exams [A1, A2].

Scheduled learning includes lectures, seminars, tutorials, project supervision, demonstration, practical classes and workshops; fieldwork; external visits; work based learning; supervised time in studio/workshop.

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. Scheduled sessions may vary slightly depending on the module choices you make.

Module Learning outcomes:

MO1 Gain an appreciation of the science underpinning all disciplines within the Biomedical Healthcare Sciences [A1, A2, B1]

MO2 Discuss the diversity of microorganisms and their ubiquity [A2]

MO3 Explain the importance of pathogenic bacteria, viruses, fungi and parasites in the context of Medical Microbiology, including food microbiology [A2]

MO4 Describe some of the major causes of human disease and explain their biological basis [A1, A2, B1]

MO5 Describe current understanding of some topical issues in the microbiology of disease [A2]

MO6 Explain the basis of disease response mechanisms such as inflammation, necrosis and cell death [A1]

MO7 Discuss approaches to the investigation and diagnosis of selected disease processes [A1, A2, B1]

MO8 Demonstrate good lab practice, basic practical and analytical skills in a simulated lab setting [B2]

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/index.html) via the following link <https://uwe.rl.talis.com/index.html>

Part 4: Assessment

Assessment strategy: The Assessment Strategy has been designed to support and enhance the development of both subject-based and more general skills, whilst ensuring that the modules learning outcomes are attained, as described below.

Component A

The online exams will provide students with an opportunity to demonstrate both their knowledge on a broad range of topics through a series of short answer questions, and more in-depth knowledge through a selection of medium length questions.

Component B

The first element of this component is a summative poster presentation based on the results and interpretation of extended simulated case study. This is designed to capture both the taught (during the online learning) and practical elements (through the block releases) of the module.

The second element tests the ability of the students to write scientifically and analyse data in the form of a laboratory book write up.

Formative feedback is available to students throughout the module through group discussions, and in workshops. Students are provided with formative feed-forward

for their exam through a revision and exam preparation session prior to the exam and through the extensive support materials supplied through Blackboard.

All work is marked in line with the Department's Generic Assessment Criteria and conforms to university policies for the setting, collection, marking and return of student work. Where an individual piece of work has specific assessment criteria, this is supplied to the students when the work is set.

This assessment strategy has been designed following best practice on effective assessment from JISC and The Open University's Centre for Excellence in Teaching and Learning.

Technical design and deployment of the activities will also follow best practice developed at UWE by the Education Innovation Centre in collaboration with academic colleagues across the university.

Assessment components:

Case Study - Component B (First Sit)

Description: Summative poster presentation based on the results and interpretation of extended simulated case study.

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO4, MO7

Examination (Online) - Component A (First Sit)

Description: Online Exam (72 hrs)

Weighting: 20 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO7

Examination (Online) - Component A (First Sit)

Description: Online Exam (24 hrs)

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO4, MO6, MO7

Laboratory Report - Component B (First Sit)

Description: Laboratory handbook

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO8

Case Study - Component B (Resit)

Description: Case study and laboratory book write up

Weighting: 60 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO4, MO7, MO8

Examination (Online) - Component A (Resit)

Description: Online Exam (24 hrs)

Weighting: 40 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Healthcare Science (Radiation Engineering) {Apprenticeship-
UWE}[Sep]FT][Frenchay][3yrs] BSc (Hons) 2020-21

Healthcare Science (Rehabilitation Engineering) {Apprenticeship-UWE}[Sep]FT][Frenchay][3yrs] BSc (Hons) 2020-21

Healthcare Science (Rehabilitation Engineering) {Apprenticeship-UWE}[Sep]FT][Frenchay][3yrs] BSc (Hons) 2020-21

Healthcare Science (Renal Technology) {Apprenticeship-UWE}[Sep]FT][Frenchay][3yrs] BSc (Hons) 2020-21

Healthcare Science (Radiotherapy Physics) {Apprenticeship-UWE}[Sep][FT][Frenchay][3yrs] BSc (Hons) 2020-21

Healthcare Science (Nuclear Medicine) {Apprenticeship-UWE}[Sep][FT][Frenchay][3yrs] BSc (Hons) 2020-21

Healthcare Science (Radiation Physics) {Apprenticeship-UWE}[Sep][FT][Frenchay][3yrs] BSc (Hons) 2020-21