



## **Module Specification**

### **Studies in the Biology of Disease**

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## Part 1: Information

**Module title:** Studies in the Biology of Disease

**Module code:** USSKAT-30-2

**Level:** Level 5

**For implementation from:** 2022-23

**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:** Infection and Disease 2022-23

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** Yes

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** Studies in the Biology of Disease is a pre-requisite for and underpins every IBMS core module at Level 3. Successful completion of this module is mandatory for IBMS accreditation.

**Features:** Not applicable

**Educational aims:** See Learning Outcomes.

**Outline syllabus:** Indicative content includes:

Homeostasis and malignant disease: Central importance of homeostasis, mechanisms of control and the consequences of failure. Concepts of disease and normality, reference ranges Mechanisms of cancer development at a cellular level, haematological disorders/malignancies, classification, diagnosis and treatment.

Cellular Pathology: Microscopic analysis of cells and tissues. Preparative processes for microscopical analysis of tissues and cells. Cell and tissue stabilisation. Histological and cytological features of the disease state.

Laboratory applications of cellular pathology; its role in diagnosis, prognosis and prediction.

Clinical Biochemistry: diagnosis, screening and monitoring of disease through qualitative and quantitative evaluation. Protein metabolism: protein turnover, hydrolysis of proteins, degradation of amino acids, urea cycle.

Diagnosis of Liver, Cardiac diseases and endocrine disorders. Drug toxicity and drug monitoring.

Haematology: haematology of normal and disease states; haemoglobinopathies and thalassaemias, anaemias, leukaemias and thrombosis. Laboratory investigation of disease states using manual and automated methods: haemoglobin variants, coagulation tests. Blood cell formation, haemopoiesis. Red cell metabolism, disorders of red cells. Haemoglobin biosynthesis, function, nature and diagnosis of anaemias. The role of the laboratory in monitoring of therapy. Immunohaematology; including identification of blood group antigens,

Transfusion Science: Main blood group systems, genetics and inheritance, structure and role of red cell antigens, blood group antibodies. Methods for antibody detection and compatibility testing; Effective blood bank practice and component preparation/storage/provision; safety aspects of blood transfusion.

Medical Microbiology: relationship between host and microorganisms, mechanisms of pathogenicity, transmission and response to infection, factors influencing susceptibility, epidemiology, diagnostic microbiology and virology: laboratory investigation of infectious diseases and vaccination. Anti-microbial/-bacterial agents.

Clinical Immunology: structure and function of the immune system, innate and acquired immunity, inflammation, tolerance. Structure and function of antibodies. Lymphocyte activation, control and measurement of soluble immunoregulators. Techniques used in laboratory investigation of immunopathological conditions and abnormal immune function: immunoassay and radioimmunoassay, ELISA, SDS-PAGE and Western blotting. Immune dysfunction: Autoimmunity and disease states (MHC, rheumatoid, coeliac, pernicious anaemia, diabetes). Immunodeficiency (complement, primary and secondary), AIDS. Hypersensitivity. Transplantation immunology, cancer immunology and related immunotherapy. Prophylaxis. Defence against infection.

Professional/Generic Aspects: Requirements for registration, the HPC and IBMS. Standards that govern pathology laboratory practice, health & safety, ethics. Quality assurance and quality control, sources of error.

Medical Genetics: introduction to key technologies used in the clinical assessment of disease, and underlying genetic causes of selected disorders.

### **Part 3: Teaching and learning methods**

**Teaching and learning methods:** Students will carry out case studies selected to illustrate the multifactorial and integrated nature of disease and its laboratory investigation.

**Module Learning outcomes:** On successful completion of this module students will achieve the following learning outcomes.

**MO1** Review the mechanisms responsible for disease and disorders in the human body

**MO2** Demonstrate knowledge of the pathophysiology, investigation and diagnosis of selected diseases

**MO3** Develop the ability to integrate the specialist areas of biomedical science into the context of a coherent case study approach

**MO4** Gain experience of clinical practice and data analysis through engagement with practical sessions within the context of a clinical case study

**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/modules/usskat-30-2.html) via the following link <https://uwe.rl.talis.com/modules/usskat-30-2.html>

## **Part 4: Assessment**

**Assessment strategy:** Component A:

Component A is a 3 hour exam. The exam will contain questions relating to the course material, providing students with an opportunity to demonstrate both their knowledge on a broad range of topics, and more in-depth knowledge.

Students are provided with formative feed-forward for their exam through a revision and exam preparation session prior to the exam.

Component B

Component B1 is a series of weekly online tests. Weekly quizzes will maintain student engagement, and allow intervention at an earlier timepoint if students fail to engage. Students have unlimited attempts at the tests. Formative feedback is available to students throughout the module through group discussion at the end of practical classes and lectures.

Component B2 is a case study portfolio. Students will complete short works relating to practical case studies, which have been enhanced through integration of patient and end-user involvement. The aim of this assessment is to introduce students to the investigative nature of biomedical science and to show how the individual disciplines integrate and aid the differential diagnosis.

Students are prepared for this assessment with a lectorial where they are presented with example assessments and answers.

**Assessment components:**

**Case Study - Component B (First Sit)**

Description: Case Study portfolio (4 x 400 words)

Weighting: 35 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

**Online Assignment - Component B (First Sit)**

Description: Weekly online tests (15 minutes per test)

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3

**Examination - Component A (First Sit)**

Description: Three Hour Examination

Weighting: 40 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

**Case Study - Component B (Resit)**

Description: Case Study Portfolio

Weighting: 35 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

**Online Assignment - Component B (Resit)**

Description: Weekly online tests (15 minutes per test)

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3

**Examination - Component A (Resit)**

Description: Three Hour Examination

Weighting: 40 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Biomedical Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Biomedical Science [Sep][SW][Frenchay][4yrs] BSc (Hons) 2021-22

Biomedical Science [Sep][SW][Frenchay][5yrs] MSci 2021-22

Biomedical Science [Sep][FT][Frenchay][4yrs] MSci 2021-22

Applied Biomedical Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Healthcare Science (Genetic Science) [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Healthcare Science (Infection Science) [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Healthcare Science (Blood Science) [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Healthcare Science (Tissue Science) [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Biomedical Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2020-21

Biomedical Science [Sep][PT][Frenchay][6yrs] BSc (Hons) 2020-21

Biomedical Science {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Biomedical Science [Sep][PT][Frenchay][8yrs] MSci 2020-21

Biomedical Science {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2020-21

Biomedical Science {Foundation} [Sep][FT][Frenchay][5yrs] MSci 2020-21

Healthcare Science (Blood Science) {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Healthcare Science (Tissue Science) {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Healthcare Science (Genetic Science) {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Healthcare Science (Infection Science) {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Biomedical Science [Sep][PT][Frenchay][6yrs] BSc (Hons) 2019-20

Biomedical Science [Sep][PT][Frenchay][8yrs] MSci 2019-20