## Module CatalogueLife SciencesUndergraduate Exchange 2024/5Semester 2

| **Module Code** | **Module Name** | **Level** | **Semester** | **UK Credit Value** | **Credit Equivalency** |
| --- | --- | --- | --- | --- | --- |
| **Biological Sciences and Biochemistry** |
| 4BICH003W | [Science: History Philosophy and Practice](#4BICH003W) | 4 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 4BIOL002W | [Cell Biology](#4BIOL002W) | 4 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 5BICH002W | [Bioinformatics](#5BICH002W) | 5 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 5BIOL001W | [Exploring the Microbial World](#5BIOL001W) | 5 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 5EVBI001W | [Contemporary Global Challenges in Biology](#5EVBI001W) | 5 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 5PHYM007W | [Neuroscience](#5PHYM007W) | 5 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 6BIOL002W | [Life: Origins and Evolution](#6BIOL002W) | 6 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| **Biomedical Sciences** |
| 5BIOM001W | [Medical Genetics and Genomics](#5BIOM001W) | 5 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 5BIOM002W | [Genetics in Medicine](#5BIOM002W) | 5 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 5BIOM008W | [Infection and Immunity](#5BIOM008W) | 5 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 6BIOM002W | [Cellular and Molecular Pathology](#6BIOM002W) | 6 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 6BIOM003W | [Clinical Immunology and Immunohaematology](#6BIOM003W) | 6 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 6BIOM007W | [Cancer Biology](#6BIOM007W) | 6 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| **Nutrition, Pharmacology and Physiology** |
| 4PHSC002W | [Evidence-Based Public Health Practice](#4PHSC002W) | 4 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 4PHSC003W | [Environment, Health and Sustainable Development](#4PHSC003W) | 4 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 4PHYM001W | [Human Physiology](#4PHYM001W) | 4 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 4PHYM002W | [Fundamentals of Pharmacology](#4PHYM002W) | 4 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 5PHYM002W | [Physiological Networks](#5PHYM002W) | 5 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 6PHYM003W | [Advanced Physiology and Pharmacology](#6PHYM003W) | 6 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |

\* All transcripts are issued in UK credits. Please note the recommendation of a 4 US credit value equivalency is provided as guidance. Final credit values for all modules for US students are decided by your home institution and will be dependent on its credit transfer policies.

## Biological Sciences and Biochemistry

### Science: History Philosophy and Practice

[**Module Code: 4BICH003W**](#4BICH003W_return)

**Level 4**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

The module will introduce students to the history and philosophy of science and to its practice in the modern world. Students will be taught about scientific communities and how scientists communicate with one another and how to read and evaluate scientific papers. We will explore the principles of scientific research, including interpreting data and critically examining scientific claims.
**Assessment:** Essay (50%), Lab-Based Practical (50%)
\*All transcripts are issued in UK credits.

### Cell Biology

[**Module Code: 4BIOL002W**](#4BIOL002W_return)

**Level 4**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

This module aims to provide an introduction to the biology of the cell and the fundamental processes and interactions that take place during the life of a cell. The biodiversity of cells within the Tree of Life will be considered, with particular focus on the domains Prokarya and Eukarya.Cell division, specialisation, aging and death will be examined at the individual and population level, alongside gene inheritance, transmission and expression, and the role of genetic variance and natural selection on cell populations.Cell behaviour and the ability of cells to communicate and interact with one another as well as impact on the environment will be covered. Practical work will ensure the student receives a foundation in experimental techniques of cell biology.
**Assessment:** Essay (30%), Portfolio (70%)
\*All transcripts are issued in UK credits.

### Bioinformatics

[**Module Code: 5BICH002W**](#5BICH002W_return)

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: 4BICH001W Biochemistry or equivalent***
The module will build on the cell biology, biochemistry, information technology and critical thinking skills acquired at level 4. This module will allow students to develop skills in the area of bioinformatics including the computational analysis of DNA and protein sequences using alignment and evolutionary models. Students will use a variety ofcomputational methods to assign gene and protein function including data from gene expression analysis and proteomics.
**Assessment:** Coursework Group (50%), Coursework (50%)
\*All transcripts are issued in UK credits.

### Exploring the Microbial World

[**Module Code: 5BIOL001W**](#5BIOL001W_return)

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisites: 4BIOL002W Cell Biology or equivalent***
The physiological and metabolic diversity of micro-organisms (eukaryotes, prokaryotes, archae) and their impacts on the environment (e.g. nutrient cycles); and man (e.g. technological applications) will be explored. Safe handling of micro-organisms, their identification, enumeration and control also will be considered.
**Assessment:** Essay (50%), Lab-Based Practical (40%), Multiple-Choice Question Test (10%)
\*All transcripts are issued in UK credits.

### Contemporary Global Challenges in Biology

[**Module Code: 5EVBI001W**](#5EVBI001W_return)

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

This module will explore regional and global problems and their impact on the world’s resources, the environment and human societies (social and economic). The underlying causes of environmental and societal pressures, e.g. climate change and infectious and non-infectious diseases, will be identified and examined and the risks these pose, e.g. water scarcity and conflicts and biodiversity loss, examined.
**Assessment:** Coursework (40%), Presentation (60%)
\*All transcripts are issued in UK credits.

### Neuroscience

[**Module Code: 5PHYM007W**](#5PHYM007W_return)

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Required background in Physiology***
The module commences with an overview of principles in neuroscience, beginning with an introduction to cellular systems and cell communication involved in fundamental neurophysiological processes. An overview of neuroendocrine physiology such as hormonal release via the hypothalamic-pituitary axis, and introductory neuroanatomy (including a mammalian brain dissection laboratory session) will also be explored. The module will also focus on the development of the nervous system and the mechanisms involved in specific brain functions as well as key neuropathological and neurocognitive disorders.
**Assessment:** Coursework (50%), In-Class Test/Assignment exam conditions (50%)
\*All transcripts are issued in UK credits.

### Life: Origins and Evolution

[**Module Code: 6BIOL002W**](#6BIOL002W_return)

**Level 6**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Considerable experience in Biochemistry required.***
The cell is the basic unit of life and an understanding of molecular basis ofcellular structures offers profound insights into biology and applications of the biological sciences. This module will allow students to explore the biochemistry and biophysics of these structures and the processes that rely upon them and thereby deepen their understanding of the molecular basis of life.
**Assessment:** Coursework (50%), Portfolio (50%)
\*All transcripts are issued in UK credits.

## Biomedical Sciences

### Medical Genetics and Genomics

[**Module Code: 5BIOM001W**](#5BIOM001W_return)

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***dis-requisite: Molecular Biology and Genetics***
***Recommend background in 4BIOL002W Cell Biology and 4BICH001W Biochemistry or equivalent***
Students will build on their knowledge of classical genetics, molecular biology and biochemistry. Teaching of molecular genetics, epigenetics and genomics technologies will be underpinned by vital elements of biochemistry needed to fully appreciate these complex and exciting fields. Students will be introduced to the fields of medical and population genetics through the study of common and rare human genetic disorders and genetic studies on experimental organisms. The importance of genetics and genomics to humanity will be explored through the study of diagnostic genetics and an introduction to genetic counselling. Throughout the module consideration will be given to recent developments, current practices and ethical considerations in genetic research and practice.
**Assessment:** Coursework (40%), Coursework (45%), Multiple-Choice Question Test (15%), Coursework (40%), Coursework (45%), Multiple-Choice Question Test (15%)
\*All transcripts are issued in UK credits.

### Genetics in Medicine

[**Module Code: 5BIOM002W**](#5BIOM002W_return)

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisites: 4BIOL002W Cell Biology and 4BICH001W Biochemistry or equivalent***
Students will build on their knowledge of classical, population and diagnostic genetics and genomics from core module: Medical Genetics and Genomics (level 5 – 1st semester). Students will be introduced to the field of applied medical genetics through the detailed study of both common and rare human genetic disorders. Several complex disorders will be explored in detail from different perspectives. The importance of medical genetics will be highlighted through the consideration of recent developments, current practices and new perspectives in modern medicine, including ethical aspects.
**Assessment:** Oral (40%), Coursework (60%)
\*All transcripts are issued in UK credits.

### Infection and Immunity

[**Module Code: 5BIOM008W**](#5BIOM008W_return)

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***4BIOL002W Cell Biology and 4BIOM004W Functional Anatomy***
An overview of pathogenic microorganisms, the factors which contribute to their virulence and pathogenicity, and the diseases they cause will be combined with an overview of the human immune system, its evolutionary development and its interactions with those microorganisms. The different components of the immune system will be covered in depth and consideration given to the roles of different leucocytes and effector molecules in the immune response including the key features and effectors of inflammation. Alongside consideration of the roles of the immune system in the elimination of microorganisms other key roles of the immune system will be considered including wound healing, immuno- surveillance and the immune response to malignancy/ cellular abnormality.
**Assessment:** Practical Work (50%), Presentation Group (50%)
\*All transcripts are issued in UK credits.

### Cellular and Molecular Pathology

[**Module Code: 6BIOM002W**](#6BIOM002W_return)

**Level 6**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***5BIOM007W Applied Pathobiology***
Students will explore the cellular and molecular basis of disease at an advanced level to provide the underpinning knowledge for the critical evaluation of routine practice and emerging molecular diagnostic techniques. To reflect the workload of the modern laboratory, there will be a focus on cancer (including solid and blood tumours). Integrated case studies will be used to explore in detail the diagnostic process, methods for assessing prognosis and the role of predictive testing for personalised medical treatment.
**Assessment:** Coursework (50%), Coursework (50%), Coursework (50%), Coursework (50%)
\*All transcripts are issued in UK credits.

### Clinical Immunology and Immunohaematology

[**Module Code: 6BIOM003W**](#6BIOM003W_return)

**Level 6**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Basic knowledge of immunology***
Immune responses to pathogens, immunopathology and prevention of infectious diseases, immune responses to tumours. Immunodeficiency, hypersensitivity and autoimmunity including investigation, diagnosis, pathology and treatment. Manipulation of immune responses including vaccines and immunotherapy. Transplantation, rejection and immunosuppression. Scientific basis, applications and clinical aspects of blood transfusion.
**Assessment:** Coursework (30%), In-Class Test/Assignment exam conditions (70%)
\*All transcripts are issued in UK credits.

### Cancer Biology

[**Module Code: 6BIOM007W**](#6BIOM007W_return)

**Level 6**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Previous study in Physiology or Biochemistry***
The module is concerned with the biology, diagnosis and clinical investigation of cancer. The key molecular changes in cancer will be discussed and how these have translated into tests used in clinical practice will be considered in the context (for example) of biomarker analysis and imaging tests. The emphasis will be on how knowledge of cancer biology has translated and impacted on clinical practice.
**Assessment:** Coursework (60%), Coursework (40%)
\*All transcripts are issued in UK credits.

## Nutrition, Pharmacology and Physiology

### Evidence-Based Public Health Practice

[**Module Code: 4PHSC002W**](#4PHSC002W_return)

**Level 4**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

This module will introduce the history of epidemiology and commonly used epidemiological tools. Alongside the development of academic reading skills and presentation of evidence, students will be guided through reflections on professional conduct as a public health practitioner. Exploration of differences between preventative medicine and public health strategies will reflect on the requirements of evidence-based practice and the importance of evidence-informed scientific communication to different target audiences.
**Assessment:** Coursework (40%), In-Class Test/Assignment exam conditions (60%)
\*All transcripts are issued in UK credits.

### Environment, Health and Sustainable Development

[**Module Code: 4PHSC003W**](#4PHSC003W_return)

**Level 4**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

This module provides students with an insight into the correlations between the environment, sustainable development and Global public health. The students will be introduced to environmental health by gaining an understanding of how the environment impacts health and human actions may influence the environment. Students will also learn about lobbying and how to design effective public health policies. Subsequently, the students will gain an understanding of how environmental issues can be addressed in public health policy and practice.
**Assessment:** Presentation Group (50%), Essay (50%)
\*All transcripts are issued in UK credits.

### Human Physiology

[**Module Code: 4PHYM001W**](#4PHYM001W_return)

**Level 4**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

This module will provide an introduction to the organisation communication and support systems of the human body. Major physiological systems will be covered with emphasis placed on the relationship between their structure and function.
**Assessment:** Coursework Practical (30%), Coursework (10%), Multiple-Choice Question Test (60%), Coursework Practical (30%), Coursework (10%), Multiple-Choice Question Test (60%)
\*All transcripts are issued in UK credits.

### Fundamentals of Pharmacology

[**Module Code: 4PHYM002W**](#4PHYM002W_return)

**Level 4**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

The module explores the scope of pharmacology and introduces the concept of drugs as biologically active, selective molecules. In addition, drug interactions with cellular targets will be studied in order to provide examples of their clinical usage and consideration of potential adverse effects. Selected experimental techniques used in pharmacology will be reviewed. The significance of absorption, distribution, metabolism and excretion in determining systemic drug action will also be studied.
**Assessment:** Practical Work (30%), In-Class Test/Assignment exam conditions (20%), Coursework (50%)
\*All transcripts are issued in UK credits.

### Physiological Networks

[**Module Code: 5PHYM002W**](#5PHYM002W_return)

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: 4PHYM001W Human Physiology or equivalent***
This module examines the fundamental mechanisms of cell communication in mammalian physiology, both intra- and intercellular. It explores common and divergent mechanisms that underlie the function of three principal systems (endocrine, immune and nervous), ultimately presenting the student with the notion that whilst systems can function autonomously, they must also function as integrated networks.
**Assessment:** Coursework (50%), In-Class Test/Assignment exam conditions (50%)
\*All transcripts are issued in UK credits.

### Advanced Physiology and Pharmacology

[**Module Code: 6PHYM003W**](#6PHYM003W_return)

**Level 6**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***5PHYM001W Medical physiology; 5PHYM003W Experimental Pharmacology & Therapeutics***
The module explores the pathophysiology of exemplar disease states (typically, cardiovascular), and detailed study of their pharmacotherapy. Applications of genomics, bioinformatics, pharmacogenetics and the emerging concept of Personalised Medicine will also be studied. Drug efficacy and toxicity will be studied extensively to provide a clinical perspective on pharmacology. This module presents students with material that explores established and emerging technologies, critical to an understanding of modern pharmacology.
**Assessment:** Coursework (60%), Coursework (40%)
\*All transcripts are issued in UK credits.