

# Module Catalogue

## Life Sciences

### Undergraduate Exchange 2019/0

### Semester 2

Module Code	Module Name	Level	Semester	UK Credit Value	Credit Equivalency
<b>Life Sciences</b>					
4BIOL001W	Applications of Biological Sciences	4	Semester 2	20	US Credits 4 / ECTS credits 10*
4BIOM004W	Functional Anatomy	4	Semester 2	20	US Credits 4 / ECTS credits 10*
4PHYM002W	Fundamentals of Pharmacology	4	Semester 2	20	US Credits 4 / ECTS credits 10*
5BICH002W	Bioinformatics	5	Semester 2	20	US Credits 4 / ECTS credits 10*
5BIOL001W	Exploring the Microbial World	5	Semester 2	20	US Credits 4 / ECTS credits 10*
5BIOM002W	Medical Genetics in Practice	5	Semester 2	20	US Credits 4 / ECTS credits 10*
5BIOM007W	Applied Pathobiology	5	Semester 2	20	US Credits 4 / ECTS credits 10*
5EVBI001W	Contemporary Global Issues	5	Semester 2	20	US Credits 4 / ECTS credits 10*
5HMNT003W	Health and Exercise Practices	5	Semester 2	20	US Credits 4 / ECTS credits 10*
5PHYM002W	Physiological Networks	5	Semester 2	20	US Credits 4 / ECTS credits 10*
6BICH001W	Advanced Molecular Biology	6	Semester 2	20	US Credits 4 / ECTS credits 10*
6BIOL002W	Advanced Cell Biology	6	Semester	20	US Credits 4 / ECTS

			2		credits 10*
6BIOM004W	Diagnostic Biochemistry and Haematology	6	Semester 2	20	US Credits 4 / ECTS credits 10*
6BIOM007W	Cancer Biology	6	Semester 2	20	US Credits 4 / ECTS credits 10*
6CLCH002W	Clinical Neuropharmacology	6	Semester 2	20	US Credits 4 / ECTS credits 10*
6HMNT001W	Global Challenges in Food and Health	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.

## Life Sciences

### Applications of Biological Sciences

**Module Code: 4BIOL001W**

**Level 4**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

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

A study of how molecular bioscience can help solve biological problems encountered by human beings. The theme followed molecular bioscience will start with a consideration of how sequencing the human genome and bioinformatic analysis has led to the incarnation of personal medicine. It will consider how human diseases and conditions are being treated in the 21st Century: the development of new antibiotics the use of stem cell biology and the science of tissue regeneration. Specific studies will be made of cancer and neuro-degeneration to show how modern molecular biochemical and biophysical techniques are being used by Bioscientists to study these diseases. In addition the wider applications of molecular science in agriculture forensic science and biotechnology will be explored.

**Assessment:** Coursework (40%), Essay (60%)

\*All transcripts are issued in UK credits.

### Functional Anatomy

**Module Code: 4BIOM004W**

**Level 4**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

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

The emphasis for this module is to develop an understanding of how the structural organisation of different cell types within a tissue/organ enable and support the tissue/organ's normal function. For every tissue/organ studied, the functional role of that tissue/organ in the whole body, as covered in Human Physiology, will be studied. A significant component of the module will be evaluating the impact of pathological processes on whole body physiology and integrity.

**Assessment:** Coursework (60%), In-Class Test/Assignment exam conditions (40%)

\*All transcripts are issued in UK credits.

## Fundamentals of Pharmacology

**Module Code:** 4PHYM002W

**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 (40%), Coursework (10%), Examination - closed book (50%)

\*All transcripts are issued in UK credits.

## Bioinformatics

**Module Code:** 5BICH002W

**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 of computational methods to assign gene and protein function including data from gene expression analysis and proteomics.

**Assessment:** Group Coursework (50%), Coursework (50%)

\*All transcripts are issued in UK credits.

## Exploring the Microbial World

**Module Code:** 5BIOL001W

**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:** Portfolio (60%), In-Class Test/Assignment exam conditions (40%)

\*All transcripts are issued in UK credits.

## Medical Genetics in Practice

**Module Code:** 5BIOM002W

**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.

## Applied Pathobiology

**Module Code: 5BIOM007W**

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

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

**Pre-req: 4BIOM004W Functional Anatomy, 4PHYM001W Human Physiology, 4BICH001W Biochemistry or equiv**

The module aims to build on knowledge of human physiology, biochemistry and anatomy acquired at Level 4 and to provide a biological insight into understanding disease processes. At the end of this module the student will be able to explain the patho- physiological alterations occurring in a number of disorders and be able to elucidate shared mechanisms within or between disease states. This module also aims to introduce the principle laboratory tests carried out by the specialist Biomedical Science disciplines as well as their integrated role of in disease investigation.

**Assessment:** Coursework (50%), Examination - closed book (50%)

\*All transcripts are issued in UK credits.

## Contemporary Global Issues

**Module Code: 5EVBI001W**

**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 (30%), Group Coursework (70%)

\*All transcripts are issued in UK credits.

## Health and Exercise Practices

**Module Code: 5HMNT003W**

**Level 5**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

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

This module will examine the complexity of practices and behaviors in health and disease in all its diversity, including effects on society's health, well-being and economy. Understanding the nature of human choice related to health and exploring the role and responsibility of government promoting societal health outcomes. Students will also consider the possibilities of intervention strategies to improve behaviour-related health.

**Assessment:** Coursework (30%), Coursework (10%), Examination - closed book (60%)

\*All transcripts are issued in UK credits.

## Physiological Networks

**Module Code: 5PHYM002W**

**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 (20%), Coursework (30%), Examination - closed book (50%)

\*All transcripts are issued in UK credits.

## Advanced Molecular Biology

**Module Code: 6BICH001W**

**Level 6**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

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

***Pre-req: 5BICH003W Molecular Biology & Genetics or 5BIOM001W Medical Genetics & Genomics or equiv***

Unique patterns in DNA are responsible for the differences seen between individuals and can predict the likelihood of developing particular disorders. Alongside these polymorphisms, epigenetics and microRNA have all greatly enhanced our knowledge about regulation of gene expression. This module will look at how a range of advanced molecular techniques such as next generation sequencing, microarrays, quantitative and multiplex PCR can be used to enhance understanding gene regulation and polymorphisms.

**Assessment:** Presentation (40%), Examination - closed book (60%)

\*All transcripts are issued in UK credits.

## Advanced Cell Biology

**Module Code: 6BIOL002W**

**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 of cellular 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%), Examination - Seen (50%)

\*All transcripts are issued in UK credits.

## Diagnostic Biochemistry and Haematology

**Module Code: 6BIOM004W**

**Level 6**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

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

***Pre-requisite: 5BIOM007W Applied Pathobiology and 5BICH001W Metabolic Biochemistry or equivalent***

Clinical and technical theory and practice underpinning the current biochemistry and haematology laboratory investigation of selected disorders. Including processes for method evaluation and the incorporation of quality

assurance systems for decision making.

**Assessment:** Presentation Group (50%), Examination - closed book (50%)

\*All transcripts are issued in UK credits.

## Cancer Biology

**Module Code:** 6BIOM007W

**Level 6**

**Semester 2**

**Location:** Cavendish

**UK Credit Value:** 20

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

**Pre-requisite:** *Medical Physiology or equivalent, or Metabolic Biochemistry or equivalent*

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:** Essay (60%), Examination - closed book (40%)

\*All transcripts are issued in UK credits.

## Clinical Neuropharmacology

**Module Code:** 6CLCH002W

**Level 6**

**Semester 2**

**Location:** Cavendish

**UK Credit Value:** 20

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

**Pre-requisite:** *4PHYM002W Fundamentals of Pharmacology and 5PHYM002W Physiological Networks or equiv*

The module further explores selected neurotransmitter systems, with an emphasis on receptor specificity and distribution, to demonstrate how complex interactions between these systems can affect cognition, affective state, motor activity and behaviours in health and disease. Mechanisms underlying neurotransmission will be examined in detail with a focus on therapeutic effects, side-effects, drugs of abuse and potential therapeutic targets. The impact of developmental changes across the lifespan and genetic variants on central nervous system function will also be examined.

**Assessment:** Coursework (40%), Examination - open book (60%)

\*All transcripts are issued in UK credits.

## Global Challenges in Food and Health

**Module Code:** 6HMNT001W

**Level 6**

**Semester 2**

**Location:** Cavendish

**UK Credit Value:** 20

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

This module will explore the many challenges to sustainable, safe and equitable food supplies. Different conceptual frameworks, such as food security and food regimes, will be compared with food providing a lens to examine the contributions of different academic disciplines in developing multi-sectoral actions. The role of the UN, government and private sector actors in relation to food production, trade, access and consumption will be examined while current policies to establish safe and equitable food supplies will also be discussed.

**Assessment:** Group Coursework (50%), Group Coursework (50%)

\*All transcripts are issued in UK credits.