Module Catalogue
Life Sciences
Undergraduate Exchange 2021/2
Semester 1

Module Code	Module Name	Level	Semester	UK Credit Value	Credit Equivalency
Biomedical Sciences					
4BIOM003W	Critical Skills for the Biomedical Sciences	4	Semester 1	20	US Credits 4 / ECTS credits 10*
4PHYM001W	Human Physiology	4	Semester 1	20	US Credits 4 / ECTS credits 10*
5BIOM001W	Medical Genetics and Genomics	5	Semester 1	20	US Credits 4 / ECTS credits 10*
5BIOM003W	Molecular and Cellular Therapeutics	5	Semester 1	20	US Credits 4 / ECTS credits 10*
5BIOM007W	Applied Pathobiology	5	Semester 1	20	US Credits 4 / ECTS credits 10*
5BIOM008W	Infection and Immunity	5	Semester 1	20	US Credits 4 / ECTS credits 10*
5BIOM009W	Human Parasitology	5	Semester 1	20	US Credits 4 / ECTS credits 10*
5PHYM001W	Medical Physiology	5	Semester 1	20	US Credits 4 / ECTS credits 10*
6BIOM002W	Cellular and Molecular Pathology	6	Semester 1	20	US Credits 4 / ECTS credits 10*
6BIOM003W	Clinical Immunology and Immunohaematology	6	Semester 1	20	US Credits 4 / ECTS credits 10*
6BIOM004W	Diagnostic Biochemistry and Haematology	6	Semester 1	20	US Credits 4 / ECTS credits 10*
6BIOM005W	Medical Microbiology in the	6	Semester	20	US Credits 4 / ECTS

	Genomics Era		1		credits 10*
Life Sciences					
4BICH003W	Science: History Philosophy and Practice	4	Semester 1	20	US Credits 4 / ECTS credits 10*
5BICH003W	Molecular Biology and Genetics	5	Semester 1	20	US Credits 4 / ECTS credits 10*
5EVBI002W	Urban Living and the Environment	5	Semester 1	20	US Credits 4 / ECTS credits 10*
5PHYM004W	Pathophysiology	5	Semester 1	20	US Credits 4 / ECTS credits 10*
6BICH002W	Proteins and Enzymes	6	Semester 1	20	US Credits 4 / ECTS credits 10*
6BIOL003W	Applied Biotechnology	6	Semester 1	20	US Credits 4 / ECTS credits 10*
6HMNT003W	Nutrition and Performance	6	Semester 1	20	US Credits 4 / ECTS credits 10*
6PHYM002W	Topics in Neuroscience	6	Semester 1	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.

Biomedical Sciences

Critical Skills for the Biomedical Sciences

Module Code: 4BIOM003W **Level 4** **Semester 1**
Location: Cavendish **UK Credit Value: 20** **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

The module will introduce students to laboratory procedures and the practice and principle of experimental design, data analysis and interpretation which lead to disease diagnosis. Emphasis will be placed on learning good laboratory techniques, the importance of conducting research in an ethical, professional and honest manner with consideration for scientific advances and technological innovation. Students will also document key transferable skills linked to their career pathway in a professional personal development portfolio
Assessment: Portfolio (70%), In-Class Test/Assignment exam conditions (30%)

*All transcripts are issued in UK credits.

Human Physiology

Module Code: 4PHYM001W | **Level 4** | **Semester 1**
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: Practical Work (30%), Coursework (10%), Examination - closed book (60%)
*All transcripts are issued in UK credits.

Medical Genetics and Genomics

Module Code: 5BIOM001W | **Level 5** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: 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 (20%), Coursework (40%), Examination - open book (40%)
*All transcripts are issued in UK credits.

Molecular and Cellular Therapeutics

Module Code: 5BIOM003W | **Level 5** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

This module comprises lectures and tutorials designed to give students an understanding of molecular and cellular therapeutic strategies available for the treatment of inherited and acquired diseases. As the field is progressing rapidly the contents are upgraded annually to introduce cutting edge current concepts and opinions. Modern molecular and gene therapies, immunotherapy, bacteriophage-based therapies, clinical trials and associated ethical issues are discussed.
Assessment: Coursework (25%), Multiple-Choice Question Test (25%), Examination - closed book (50%)
*All transcripts are issued in UK credits.

Applied Pathobiology

Module Code: 5BIOM007W | **Level 5** | **Semester 1**
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.

Infection and Immunity

Module Code: 5BIOM008W | **Level 5** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: 4BIOL002W Cell Biology and 4BIOM004W Functional Anatomy or equivalent
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: Coursework (40%), Examination - closed book (60%)
*All transcripts are issued in UK credits.

Human Parasitology

Module Code: 5BIOM009W | **Level 5** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

The pathogenesis of human parasitic diseases; case histories will be used to demonstrate the principles and practice of parasitology. Life cycles and control of insect, worm and protozoan parasites including malaria, schistosomiasis, trypanosomiasis and nematode infections. The failures and successes of control programmes will be reviewed. Other topics covered will be the impact of HIV/AIDS, the effect of parasitic infections on nutrition and the importance of insects as vectors of parasitic diseases.
Assessment: In-Class Participation (40%), Examination - closed book (60%)
*All transcripts are issued in UK credits.

Medical Physiology

Module Code: 5PHYM001W | **Level 5** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: Previous study in Physiology or Biochemistry
Using student-centred enquiry based learning, which allows students to become co-creators of their own knowledge in a small group format, students will be required to integrate and synthesize material covered in this module with learning from both Physiological Biochemistry and Physiological Networks in order to further their understanding of how the different body systems are regulated and how one system influences another. Clinical disorders will be

used to demonstrate the consequence(s) of disruption to normal function in one system on another system/other systems.
Assessment: Portfolio (90%), In-Class Test/Assignment exam conditions (10%)
*All transcripts are issued in UK credits.

Cellular and Molecular Pathology

Module Code: 6BIOM002W | **Level 6** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: 5BIOM007W Applied Pathobiology or equivalent
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: Portfolio (50%), Examination - closed book (50%)
*All transcripts are issued in UK credits.

Clinical Immunology and Immunohaematology

Module Code: 6BIOM003W | **Level 6** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: 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 (40%), Examination - open book (60%)
*All transcripts are issued in UK credits.

Diagnostic Biochemistry and Haematology

Module Code: 6BIOM004W | **Level 6** | **Semester 1**
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: Portfolio (40%), Examination - closed book (60%)
*All transcripts are issued in UK credits.

Medical Microbiology in the Genomics Era

Module Code: 6BIOM005W | **Level 6** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: 5BIOM008W Infection and Immunity or equivalent
Detection, identification and characterization of pathogenic microorganisms. Pathogenesis, transmission and epidemiology of infectious diseases; treatment and prevention of infectious with emphasis on diseases of current and emerging importance. Also covered are: laboratory automation, antibiotic resistance; microbial genomics and bioinformatics: public health measures used for disease control.
Assessment: Coursework (40%), Examination - closed book (60%)
*All transcripts are issued in UK credits.

Life Sciences

Science: History Philosophy and Practice

Module Code: 4BICH003W | **Level 4** | **Semester 1**
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: Coursework (40%), Presentation (10%), Examination - restricted (50%)
*All transcripts are issued in UK credits.

Molecular Biology and Genetics

Module Code: 5BICH003W | **Level 5** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisites: Previous study in Biochemistry
This module will build on fundamental principles covered at level 4 about DNA and gene expression to introduce concepts about epigenetic and microRNA gene regulation. The module will discuss polymorphisms and their inheritance. A range of molecular techniques will be covered which include DNA isolation from a range of starting sources, amplification of specific regions of DNA, separation of DNA fragments, cloning, recombinant DNA expression and sequencing.
Assessment: Multiple-Choice Question Test (30%), Coursework (40%), Presentation Group (30%)
*All transcripts are issued in UK credits.

Urban Living and the Environment

Module Code: 5EVBI002W | **Level 5** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Urbanisation presents a unique set of challenges to the environment and organisms, including humans. This module will explore impacts of the built environment, industry, transport and recreation on urban ecosystems and human health and wellbeing.
Assessment: Group Coursework (60%), Examination - open book (40%)
*All transcripts are issued in UK credits.

Pathophysiology

Module Code: 5PHYM004W | **Level 5** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: Previous study in Physiology
Building on level 4 Physiology, this module describes and explains major pathophysiological processes and underlying mechanisms e.g. cellular growth patterns, injury, repair, inflammation, aging, and how these contribute to the features of disease.
Assessment: Essay (50%), Examination - closed book (50%)
*All transcripts are issued in UK credits.

Proteins and Enzymes

Module Code: 6BICH002W | **Level 6** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: 4BICH001W Biochemistry and 5BICH002W Bioinformatics or equivalent
A primer in the practical approach to studying protein function through an appreciation of structure and biochemistry. In vivo, in vitro and in silico methods to analyse proteins, particularly enzymes, will be explored. Recombinant protein production will be addressed theoretically and modern structural techniques will be addressed practically. Parameters of biochemical and biophysical assays will be explored to understand function of particular proteins. Students will learn a practical appreciation for how to make amino acid substitutions in proteins and how to evaluate the outcomes of these mutations. Protein evolution will be discussed from underlying principles at the DNA level to subtle modifications in function through adaptation of function. Software packages that allow protein manipulation and structure rendering will be employed. Tutorials will be employed for all topics to engage students with the comprehension and evaluation of data, particularly, but not limited to, published material
Assessment: Coursework (40%), Examination - closed book (60%)
*All transcripts are issued in UK credits.

Applied Biotechnology

Module Code: 6BIOL003W | **Level 6** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

The module will explore various applications of biotechnology including applications in medicine, food production, solving environmental problems and industrial production of commodity chemicals and energy.
Assessment: Presentation Group (20%), Essay (20%), Examination - closed book (60%)
*All transcripts are issued in UK credits.

Nutrition and Performance

Module Code: 6HMNT003W | **Level 6** | **Semester 1**
Location: Cavendish | **UK Credit Value: 20** | **Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: 5HMNT001W Diet in Health and Disease and 5HMNT002W Applied Nutrition or equivalent
Sound nutritional practices based on scientific research form the platform for athletic performance. This module provides students with an overview of the role of nutrition in regulating physiological processes associated with sport

and exercise performance. Nutritional requirements and recommendations for physically active individuals are covered. The module also allows students the opportunity to assess the efficacy of nutritional strategies intended to enhance athletic performance.
Assessment: Coursework (50%), In-Class Test/Assignment exam conditions (50%)
*All transcripts are issued in UK credits.

Topics in Neuroscience

Module Code: 6PHYM002W	**Level 6**	**Semester 1**
Location: Cavendish	**UK Credit Value: 20**	**Equivalent Credit Value: US Credits 4 / ECTS credits 10***

Pre-requisite: 5PHYM002W Physiological Networks or equivalent
The module provides a detailed survey of selected structural and functional aspects of neuroscience, with emphasis upon diseases affecting the nervous system. Detailed physiological and cellular aspects of neuroscience will be addressed, focussing on specific topics (typically, neurodevelopment, control and disorders of movement, learning and memory and neurodegenerative diseases). Students will develop their analytical and investigative skills in order to explore issues in neuroscience and potential therapeutic interventions.
Assessment: Portfolio (40%), Examination - Seen (60%)
*All transcripts are issued in UK credits.