

## **2019/0 - BIO-4001A BIODIVERSITY**

Autumn Semester, Level 4 module  
(Maximum 150 Students)

UCU: 20    Organiser: Dr Harriet Jones

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:G1/, D3\, G2\+, H2, A2/

This module explores life on Earth. You will be introduced to the major groups of microorganisms, plants and animals. You will explore the evolutionary relationships that link the major groups and discover the immense biodiversity of living organisms. Central to this evolutionary path is how microorganisms, plants and animal invaded the land and coped with limited water. You will study this subject through lectures, workshops, laboratory-based practical classes and field trips. You will gain practical experience handling a wide range of organisms and learn how to report experimental work that you carry out. A key part of this module is the production of a learning portfolio which will help you to develop independent study skills in relation to the topic of the module.

## **2019/0 - BIO-5002A BIOCHEMISTRY**

Autumn Semester, Level 5 module  
(Maximum 180 Students)

UCU: 20    Organiser: Dr Richard Bowater

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:H1-I1\, H3/, G2/, C1/-B3, C2

BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-4013Y

This module aims to develop your understanding of contemporary biochemistry, especially in relation to mammalian physiology and metabolism. There will be a particular focus on proteins and their involvement in cellular reactions, bioenergetics and signalling processes.

## **2019/0 - BIO-5004A HUMAN PHYSIOLOGY**

Autumn Semester, Level 5 module  
(Maximum 180 Students)

UCU: 20    Organiser: Dr Jeremy Rhodes

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:D3\, F3, A2/, G1/, H2\, G2\+

Exam Paper(hrs):4

BEFORE TAKING THIS MODULE YOU MUST ( TAKE BIO-4013Y OR TAKE BIO-4009Y OR TAKE CHE-4602Y

We will provide you with an understanding of the themes and principles of physiology and a detailed knowledge of the major human organ systems. An understanding of how disease affects the ability of organ systems to maintain the status quo will be an important part of this course.

### **2019/0 - BIO-5006A PLANT BIOLOGY**

Autumn Semester, Level 5 module  
(Maximum 40 Students)

UCU: 20 Organiser: Dr Charles Brearley

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot: B2, D2, A1, F1\

Exam Paper(hrs):2

The module studies the biochemical, physiological and developmental processes of plants.

### **2019/0 - BIO-5009A GENETICS**

Autumn Semester, Level 5 module  
(Maximum 130 Students)

UCU: 20 Organiser: Dr Colwyn Thomas

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot: B1, D3/, F2, D1, A2\

Exam Paper(hrs):2

**BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-4013Y  
IN TAKING THIS MODULE YOU CANNOT TAKE BIO-5011A**

The aim is to provide you with an appreciation of genetics at a fundamental and molecular level and to demonstrate the importance and utility of genetic studies. Genetics and molecular biology lie at the heart of biological processes, ranging from cancer biology to evolution.

### **2019/0 - BIO-5011A CLINICAL GENETICS**

Autumn Semester, Level 5 module  
(Maximum 85 Students)

UCU: 20 Organiser: Dr Mark Williams

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot: B1, D3/, F2\, D1

Exam Paper(hrs):2

**BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-4013Y AND TAKE BIO-  
4012Y  
IN TAKING THIS MODULE YOU CANNOT TAKE BIO-5009A**

This module imparts the theory and practice of clinical genetics. A detailed comprehension of basic genetics will be obtained from lectures provided within BIO-5009A (Genetics). Students undertaking this module will then build on these details to identify how genetics is important in a modern, well-founded clinical setting. An overview of clinical genetics services will deal with aspects ranging from molecular pathology and techniques for DNA analysis through to genetic assessment and genetic counselling. Genetics and molecular biology lie at the heart of biological processes, ranging from cancer biology to evolution.

### **2019/0 - BIO-5013A FIELD ECOLOGY**

Autumn Semester, Level 5 module

(Maximum 55 Students)

UCU: 20

Organiser: Dr Iain Barr

MODULE - 40% PASS ON AGGREGATE

Module Type: Project

Timetable Slot:F2

This module aims to introduce you to a wide range of habitats and methods for studying the organisms and natural processes occurring in these habitats. The focus is on identification of species and on formulating and testing hypotheses to investigate interactions between species and their habitats or on examining environmental gradients. The module includes a two week residential field trip to Ireland before the start of the first semester in the autumn term. This module would suit you if you are interested in natural history, geography, ecology and designing and testing scientific hypotheses.

### **2019/0 - BIO-6001A MOLECULAR ENZYMOLOGY IN BIOLOGY AND MEDICINE**

Autumn Semester, Level 6 module

(Maximum 60 Students)

UCU: 20

Organiser: Dr Andrew Hemmings

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:D3/, B1-D1, F2-A2\

Exam Paper(hrs):3

**BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-5002A OR TAKE CHE-5601Y**

The module sets out to explain the molecular basis of the often complex catalytic mechanisms of enzymes concentrating particularly on their relevance to and applications in biotechnology and medicine. An extended practical based on the kinetics of a model enzyme, chymotrypsin, helps underpin concepts learnt in the module.

### **2019/0 - BIO-6003A CELLULAR SIGNALLING**

Autumn Semester, Level 6 module

(Maximum 40 Students)

UCU: 20 Organiser: Dr Samuel Fountain

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:H3\, E1/, F1/

Exam Paper(hrs):3

**BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-5005B OR TAKE BIO-2B06**

How do cells receive and react to information from their external environment? What is the molecular basis for how cells respond to external signalling cues and how does this relate to physiological processes? In this module you will study cellular signalling by ion channels, G protein-coupled receptors, enzyme-linked receptors; the associated signal transduction mechanisms and relevance to human physiology and disease. The module includes aspects of the molecular basis of cellular signalling, structure-function relationships and pharmacology. You will study the molecular basis of cellular signalling by three principle receptor families, namely ion channels, G protein-coupled receptors and enzyme-linked receptors. You will build on your knowledge of cell biology and human physiology to deepen your understanding of cellular signalling. You will learn through lectures and independent study.

### **2019/0 - BIO-6004A MICROBIAL BIOTECHNOLOGY**

Autumn Semester, Level 6 module

(Maximum 40 Students)

UCU: 20 Organiser: Dr Tom Clarke

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:E2+, B2, F1\

Exam Paper(hrs):3

**BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-5015B OR TAKE BIO-5003B OR TAKE BIO-2B28 OR TAKE BIO-2B02**

This module provides an overview of the uses of microorganisms in biotechnological principles. You will receive training in the basic principles that control microbiological culture growth, the microbial physiology and genetics that underpin the production of bioproducts such as biofuels, bioplastics, antibiotics and food products, as well as the use of micro-organisms in wastewater treatment and bioremediation.

### **2019/0 - BIO-6009A CANCER BIOLOGY**

Autumn Semester, Level 6 module

(Maximum 140 Students)

UCU: 20 Organiser: Dr Helen James

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:D2, A1

Exam Paper(hrs):3

Do you want to learn about the concepts and principles of genetic analysis of cancer? On this module you will learn about the various roles of genes in development, apoptosis, the cell cycle, metastasis and angiogenesis, for example, and discuss the potential for novel therapies. We work closely with experts at the Norfolk & Norwich University Hospital wherever possible, enabling you to gain an in-depth appreciation of cancer as a disease process from both the scientific and clinical viewpoints.

## **2019/0 - BIO-6012A EMBRYO DEVELOPMENT AND STEM CELL BIOLOGY**

Autumn Semester, Level 6 module

(Maximum 90 Students)

UCU: 20

Organiser: Dr Grant Wheeler

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot: E2+/-C3, B2, F1\, A1/, I3, C1/-B3

Exam Paper(hrs):3

**BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-5005B OR TAKE BIO-5009A OR TAKE BIO-5011A**

You will study the mechanisms that drive embryonic development, including the signals and signalling pathways that lead to the establishment of the body plan, pattern formation, differentiation and organogenesis. Your lectures will cover different model organisms used in the study of development with a focus on vertebrate systems. The relevance of embryonic development to our understanding of human development and disease is a recurring theme throughout the module, which also covers stem cells and organoids and their role in enhancing our understanding of development and disease, healthy tissue maintenance and drug discovery.

## **2019/0 - BIO-6013A GENOMES, GENES AND GENOMICS**

Autumn Semester, Level 6 module

(Maximum 50 Students)

UCU: 20

Organiser: Dr Colwyn Thomas

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot: F3, G2+, A2/, G1/-H2, C2/-D3\

Exam Paper(hrs):3

**BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-5009A OR TAKE BIO-5011A**

This module will provide you with knowledge of the biological analysis of genomes. This will focus on our understanding of genome composition, organisation and evolution, and the global regulation of gene expression. When you have completed this module you will understand contemporary methods that inform us about the biology of genomes.

## **2019/0 - BIO-6016A HOST-PARASITE INTERACTIONS**

Autumn Semester, Level 6 module  
(Maximum 45 Students)

UCU: 20                                      Organiser: Dr Iain Barr

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot: B3, H3/, G2/, F3

Exam Paper(hrs):3

This module examines the complex interactions between parasites/diseases and their hosts and explores how the selection pressures that each side of these interactions impose lead to coevolutionary processes. We will take an overview of the role that such parasitic interactions may have played in the development of key biological traits. The module will include traditional parasitology (to set the scene and understand the complexity of the interactions), introducing the major groups of parasites and their hosts. We examine the role of parasites and host-parasite interactions in evolution, drawing examples from conservation, behaviour, current medical research, theoretical predictions and models.

## **2019/0 - BIO-6017A EVOLUTION IN HEALTH AND DISEASE**

Autumn Semester, Level 6 module  
(Maximum 80 Students)

UCU: 20                                      Organiser: Professor Tracey Chapman

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot: C1, C2

Exam Paper(hrs):2

The module provides up-to-date learning in evolutionary medicine and the evolution of disease. You will examine how evolutionary principles illuminate and provide fresh insight into a broad range of contemporary health problems including infectious, chronic and nutritional diseases and disorders. Topics are introduced in a multidisciplinary approach that takes into account the relationship between biology and society. The module covers 4 areas: (i) principles of evolutionary medicine - humans in their evolutionary context; (ii) evolution and non-infectious diseases (cancer, lifestyles, ageing); (iii) evolution and infection (vaccines, antibiotics, pathogens, emerging diseases); (iv) personalised medicine and social context of evolutionary medicine.