

ECOSYSTEM BIOLOGY & SUSTAINABILITY

STUDY ABROAD MODULE OPTIONS

LEVEL 1	
DOUBLE SEMESTER: FALL & SPRING	
BIO1305 Biodiversity (40 CATS)	
BIO1304 Molecular Basis of Life (40 CATS)	
LEVEL 2	
SEMESTER 1: FALL	SEMESTER 2 : SPRING
BIO2107 Applied Ecology (20 CATS)	BIO2204 Introduction to Environmental Economics (20 CATS)
BIO2105 Environmental Assessment (20 CATS)	
BIO1102 Environmental Management (20 CATS)	
LEVEL 3	
SEMESTER 1: FALL	SEMESTER 2 : SPRING
BIO3109 Policies for Environmental Sustainability (20 CATS)	

Please note: modules may require demonstration of prior learning. Modules may be subject to change.



**QUEEN'S
UNIVERSITY
BELFAST**

FACULTY OF
MEDICINE,
HEALTH AND
LIFE SCIENCES

GET IN TOUCH
EMAIL: ASKMHLS@QUB.AC.UK
WHATSAPP: 07851880522

MODULE OVERVIEWS

BIO1305 Biodiversity

Upon completion of this module, you will have a basic understanding of the diversity in form, function and biology of living organisms. In addition, you will develop skills of observation, recording, analysis, microscopy, dissection, experimental design and structure-function interpretation through practical work. Topics covered include; the origin and evolution of life-evolution of populations and species-prokaryote, protist, plant, fungal and animal form and diversity-analyses of the distribution and abundance of individuals and population; interactions between organisms; energy and nutrient flow-the marine, freshwater and terrestrial habitats; application of ecological principles to the control of pest species; conservation-pollution and the biology of polluted environments alongside an introduction to data analysis for biology.

BIO1304 Molecular Basis of Life

This module will give you a knowledge and understanding of: the structure and roles of nucleic acids, amino acids and proteins, including specific named examples; some of the techniques used to study them including pH, pKa, absorbance calculations and PCR; the genetic code, its translation into proteins, its effect on the phenotype by biochemical activity; basic control of differentiation in embryogenesis, the structure and transmission of chromosomes (nuclear and organelle); independent segregation, linkage and recombination; evolution by selection; the methods of study of allele frequencies at population level, including the Hardy-Weinberg equilibrium prediction, its calculation, interpretation and use; the use of web-based bioinformatics tools to identify a protein-encoding gene, predict protein structure and function and the applications of genetics in biotechnology. You will develop laboratory skills related to molecular biology, biochemistry and genetics as well as computational analyses of genome/transcriptome data.

BIO2107 Applied Ecology

This module teaches further practical experience in field ecology methods and an appreciation of how human activities have influenced local, regional and global populations and communities of biological species. Topics covered include Environmental change, spatial ecology, grassland ecology, upland ecology, climate change, conservation biology, ecosystem services, pollination biology, exploitation of natural populations.

BIO2105 Environmental Assessment

By the end of the module students will be able to demonstrate a knowledge and understanding of environmental assessment and have had experience of the process of carrying out an environmental impact assessment, including site assessments. The module covers an introduction to the concepts and processes of Environmental Impact Assessment and to the EU EIA Directive. The module contains a workshop on State of the Art Methods for Assessing Water, Air, and Noise Impacts and Ecological Social and Health Impacts. There are two site visits, one to an Annex 1 project under the EU EIA Directive to inspect and assess potential impacts on the environment and mitigation measures in place.



BIO1102 Environmental Management

This module introduces the the concept of sustainable environmental management: environmental problems, their causes and sustainability; biodiversity; water resources and water pollution; energy resources; air pollution, climate change and ozone depletion; solid hazardous waste; food security; environmental management systems. Moral and ethical issues of environmental management. During seminars students will discuss major environmental problems through the use of multimedia devices. A site visit will present the students with a relevant case in environmental management.

By the end of the module students will be able to demonstrate:

- Knowledge and understanding of the principles of sustainable and non-sustainable environmental management;
- Knowledge of major issues and the main methods used in waste management;
- Understanding of the principles and problems in managing biodiversity;
- Understanding of major issues in water management;
- Appreciation of the problems and solutions to climate change and air quality management;
- Understanding of major issues in air quality and air quality management;
- Understanding of the energy problems;
- Understanding of the principles of food security and sustainability in food production

BIO2204 Introduction to Environmental Economics

This module introduces the subfield of economics concerned with environmental issues. Themes include: market failure including externalities, property rights and public goods; renewable and non-renewable resources; economics of pollution; environmental valuation and cost/benefit analysis. This course is to encourage students to develop an objective and critical engagement with environmental-economy inter-linkages in theory and policy practice. It will make students aware of some of the most important contemporary issues in environmental economics.

BIO3109 Policies for Environmental Sustainability

By the end of this module students will be able to demonstrate a knowledge and understanding of international and local policies in relation to environmental quality and sustainability and the practical implementation of these policies. Topics covered include:

- Introduction and motivation to agri-environmental policy
- Climate change and international agreements on limiting greenhouse gas emissions
- Government policy for climate change and energy polices
- Government policy on waste management, contaminated land and environmental liability
- Implementation of the EU Habitats Directive, CAP and agri-environmental schemes
- The EU Water Framework Directive and its implementation
- The EU Common Fisheries Policy and conservation of fisheries stock
- Practical Work: Site visit to inspect at first hand the implementation and enforcement of a major aspect of environment policy in Northern Ireland.

