



**Bachelor of Science (Honours) in Biological Science**  
生物科學(榮譽)理學士  
HS026A



**THE UNIVERSITY OF HONG KONG**  
**School of Professional and Continuing Education**

in association with  
**EDINBURGH NAPIER UNIVERSITY**

Part-time degree programme



## Edinburgh Napier University

Located in Scotland's cosmopolitan and beautiful capital city, Edinburgh Napier University is home to forward thinking people inspired by the world around them. The University aims to create and support personalized learning and research opportunities that develop talent and solutions that really work and matter in today's and tomorrow's world.

With more than 6,300 overseas students from outside the European Union, Edinburgh Napier is a truly international University with students from 110 countries. Edinburgh Napier is proud to be the largest UK provider of Higher Education in Hong Kong, with over 3,000 students a year studying a range of courses. In 2014 the University celebrated 20 years in Hong Kong.



As a testament to our commitment to being connected with business and industry, the University is in the top 20 in the UK for graduate employability, with 95.14% of undergraduates in further work or study within six months of graduating (HESA 2014/2015). It also means that courses are accredited by over 100 Professional Bodies. The University is also ranked in the UK top 10 for Journalism, Publishing & Public Relations, and for Hospitality, Event Management & Tourism (Guardian University Guide 2017).

- 95% of Edinburgh Napier's UK graduates are in work or further study six months after graduating (HESA 2014/2015).
- The UK's Telegraph newspaper listed Edinburgh Napier as one of the top twenty UK universities for 'getting a job' (2016). Ranked 1st in the UK for Value Added a measure of students' entry qualifications against the honours degree results they go on to achieve (Guardian University Guide 2017).
- In the 2016 QS Stars international university rankings, the quality of our teaching, internationalization and employability were all officially recognized, with the University scoring five stars in each category.

## Bachelor of Science (Honours) in Biological Science 生物科學(榮譽)理學士

This BSc (Hons) in Biological Science programme is a two-year part-time evening programme jointly offered by the Edinburgh Napier University and HKU SPACE and structured for those with a background education in the biological science or medical laboratory science disciplines wishing to progress to degree or honours degree level. This programme places an emphasis on practical skills, with laboratory classes included in several of the modules, and a research or work-related project. In addition to those general scientific skills, this programme is designed to develop for students a wide range of employability and transferable skills. It will equip students for any graduate level scientific job, and provide them with the specialist skills to go into a wide range of biological careers and contribute to their successful integration in employment in the biological science/life science sector.

### Programme Highlights

- *Face-to-face* teaching
- *Co-teaching* by visiting lecturers from Edinburgh Napier University and local lecturers of related disciplines
- Use of a *wide range of teaching and assessment methods* to develop relevant skills and confidence in students

## Programme Structure

The programme will be delivered in 3 trimesters, with 15 weeks (including examinations) in each. The award of BSc (Hons) can be achieved in 2 years (24 months) part-time study.

Module Title	Credits
<b>Year 1</b>	
Introductory & Applied Molecular Genetics	20
Medical Microbiology	20
Applied Immunology	20
Food Microbiology & Biotechnology	20
Clinical Biochemistry / Microbiology Testing	20
Scientific Communication – Dissertation & Statistics	20
<b>Bachelor of Science Biological Science</b>	<b>120</b>
<b>Year 2</b>	
Environmental Toxicology	20
Application of Molecular Biology	20
Biotechnology – Industry & Environment	20
Applied Toxicology	20
Research/Work-related Project	40
<b>Bachelor of Science (Honours) Biological Science</b>	<b>240</b>

Edinburgh Napier BSc graduates (60-credit top-up programme) wishing to attain BSc (Hons) will be given exemption credits based on their previous studies for Medical Microbiology or Introductory & Applied Molecular Genetics, Applied Immunology or Food Microbiology & Biotechnology, Scientific Communication – Dissertation & Statistics and, in some cases, Microbiology Testing.

## Course Content

### *Introductory & Applied Molecular Genetics (20 credits)*

Starting with a revision of DNA/RNA structure and function, and transfer of genetic information, this module is designed to cover the key concepts of molecular genetics. You will study what happens when DNA is damaged by chemicals or radiation in our environment and the repair mechanisms available; how DNA is transferred between bacteria; and the mechanisms employed in gene regulation in both prokaryotic and eukaryotic organisms in response to different stimuli. Finally, you will study the applied aspects of recombinant DNA technology. This module also includes laboratory classes.



### *Applied Immunology (20 credits)*

In this module you will explore the molecular and cellular network underlying the functions of the human immune system and the role of the immune system in disease. You will study the applied aspects of immunotechnology including blood typing, transplantation, monoclonal antibodies and vaccines, illustrating the value of immunology in diagnosis and therapeutics. This module also includes laboratory classes.

### *Medical Microbiology (20 credits)*

In this module you will examine medically important pathogens including viruses, bacteria, fungi and parasites. You will explore the role of the host immune system and how microbes may overcome it to cause disease, and gain an understanding of how infectious diseases are transmitted, diagnosed, treated and prevented. You will also develop important transferable skills in critical and analytical thinking as well as laboratory techniques in medical microbiology.

### *Food Microbiology & Biotechnology (20 credits)*

In this module you will learn about aspects of microbiology and biotechnology of relevance to the food industry, including the risk management of food-borne disease, the microbial metabolism contributing to food fermentations and spoilage, GM crops and the scientific basis behind functional foods. This module also includes laboratory classes.



### *Scientific Communication: Dissertation & Statistics (20 credits)*

In this module you will review primary scientific literature on an agreed topic relating to your area of study. You will search for and abstract from relevant primary literature, and present potentially conflicting information in a scientific and objective style. In the statistics part of the module you will formulate appropriate experimental designs for a variety of circumstances and analyze data using analysis of variance, regression analysis and repeated measures techniques and learn when it is appropriate to use each of these methods.



### *Clinical Biochemistry (20 credits)*

In this module you will be given an introduction to the application of biochemistry in a clinical setting and how this knowledge can be used to diagnose disease and explain the action of administered drug molecules. You will get an insight into the workings of a modern hospital clinical biochemistry laboratory, routine tests and their biochemical basis, the interpretation of test results and relevance of test results in a clinical biochemical setting. This module also includes laboratory classes.

### *Microbiology Testing (20 credits)*

In this module you will learn about the principles of bacterial diagnosis, the detection and identification of indicator organisms and pathogens in the environment and in food. Laboratory classes will help develop your knowledge on biological safety control measures, the practical issues and international standards for microbiology testing laboratories.

### *Applications of Molecular Biology (20 credits)*

In this module you will study the structure and organization of prokaryotic and eukaryotic genomes. You will examine the different features of the human genome and relate these to applications in DNA sequencing, DNA profiling, epigenetics and RNA interference. You will appraise the tools of modern molecular biological analysis and develop an appreciation of the uses, designs and limitations of these techniques in contributing to our understanding of biological systems. You will also learn how to analyze and interpret data from gene expression studies and employ the use of bioinformatics tools for analysis of sequence data.



### *Environmental Toxicology (20 credits)*

This module will examine different types of pollution, their effects on the environment, species, communities and humans. Methods of assessment toxicity and environmental quality will be studied. Short-term and long term toxicity tests will be conducted and data analyzed and interpreted. Hazard and risk assessment approaches will be discussed. This module also includes laboratory classes.

### *Biotechnology – Industry & Environment (20 credits)*

This module focuses on issues of current relevance in the areas of environmental and industrial biotechnology. You will examine recent developments in the areas of bioremediation, biosensor and biofuel development, including consideration of regulatory and ethical aspects where appropriate. You will also explore areas of bioprocess technology of relevance to fermentation-based industries, e.g. fermentation technology and kinetics.

### *Applied Toxicology (20 credits)*

The module will provide you with an introduction to the science of toxicology in humans. This includes the basic principles of toxicokinetics (absorption, distribution, metabolism and excretion), and the factors affecting each, such as exposure route, age, diet, and genetic polymorphisms in drug metabolizing enzymes. You will examine the cellular and molecular mechanisms of xenobiotic toxicity, together with toxicity testing in the pharmaceutical industry, and the use of biomarkers for studying the exposure, response and susceptibility of populations to named toxicants.

### *Research/Work-Related Project (40 credits)*

In this module you will conduct an independent research and/or work-related project, developing skills in project planning and time management, critical analysis and interpretation of data, and the ability to communicate the results of a study. The module content is driven by the needs and requirements of the individual projects, and thus is highly diverse and individualized. The core content includes the design of scientific investigations/work-related project, time management and project planning, data collection and analysis, use of appropriate information technology and statistical analysis to guide interpretation of data, and report presentation and development.

### **Entry Requirements**

Applicants shall have achieved either:

1. a Higher Diploma or an Associate Degree in a subject related to the biological sciences, for example
  - Analytical Science and Technology
  - Applied Biology/Biotechnology
  - Biomedical Science
  - Environmental Health
  - Environmental Technology
  - Food Science and Technology
  - Medical and Health Products Management
  - Nutrition
  - Pharmaceutical Technology

OR

2. a Higher Certificate or Higher Diploma in Medical Laboratory Science;

OR

3. other equivalent qualifications.

### **English language requirements**

Students are expected to have achieved either:

- i) AS-Level (or equivalent) pass in the Use of English;

OR

- ii) a minimum of a PASS in all English language/communication subjects as part of the Higher Certificate/Higher Diploma/Associate Degree programmes, plus HKDSE Level 2 pass in English Language.



Students with a BSc (or equivalent) in a relevant discipline will be considered for advanced entry to the BSc (Hons) programme. Exemption credits will be awarded on the basis of prior gained credit and possession of the prerequisite knowledge required to succeed on the programme.

### **Delivery Mode**

This programme is delivered on a part-time basis. Normally classes will be held on weekday evenings and/or Saturdays.

### **Medium of Instruction**

English

### **Assessment**

Assessment of modules is normally based on a combination of coursework and examination. Coursework can include laboratory/project reports, tutorial exercises, laboratory performance, oral and poster presentation.

### **Duration of Study and Award**

Students can complete the programme in 2 years (6 trimesters), part-time mode (2 modules / 40 credits

per trimester). Students who have successfully completed the programme will be awarded Bachelor of Science (Honours) Biological Science degree by the Edinburgh Napier University. An exit award of BSc Biological Science ordinary degree is available for students who only study the first year of the programme (3 trimesters in 1 year).

### Further Studies

Graduates may also progress to programmes of study to masters and doctoral level. In addition to careers in the life sciences, students may use the wide range of employability skills they have developed to attain graduate level jobs in other sectors, e.g. administration, business and education. Graduates will also be considered for admission to the MSc Biomedical Science currently offered by Edinburgh Napier University in conjunction with HKU SPACE.

### Career Opportunities

The BSc (Hons) Biological Science programme aims to provide knowledge and experience leading to career opportunities in a wide variety of areas including biomedical, pharmaceutical, environmental monitoring, public health, agrochemical and food sectors. It may provide opportunities to work in industrial research and development, production, quality control and consultancy.

### Tuition Fee\*

HK\$77,000 (Year 1) and HK\$85,000 (Year 2) to HKU SPACE

\* This is the rate of tuition fee for Academic Year 2016/17. Fees are reviewed annually and are subject to change without prior notice.

### Application

Applicants should submit:

1. Duly completed HKU SPACE application form<sup>#</sup>
2. Copies of academic certificates;
3. A copy of HKID card or passport; and
4. An application fee of HK\$150 by crossed cheque {payable to "HKU SPACE"}

All documents should be sent to Ms. Carol LUI, Room 1806-8, 18/F, Fortress Tower, 250 King's Road, North Point, HK. Please send a self-addressed envelope with a \$1.7 stamp, specifying the name of this programme. Closing date for application: 12 May 2017.

<sup>#</sup> Application forms can be obtained from any HKU SPACE Learning Centre or download from <http://hkuspace.hku.hk>.

### Enquiries

☎: 2975 5698 (Ms. Carol LUI )

✉: [carol.lui@hkuspace.hku.hk](mailto:carol.lui@hkuspace.hku.hk)

🌐: <http://hkuspace.hku.hk/prog/bsc-biological-science>

Note: The programme is an exempted course under the Non-Local Higher and Professional Education (Regulation) Ordinance. It is a matter of discretion for individual employers to recognize qualification to which this course may lead. Information in this leaflet is subject to change by HKU SPACE and Edinburgh Napier University without prior notice. Please refer to HKU SPACE website or contact Programme Staff for latest information.