Internship and Research Opportunities
實習和科研機會

BSc (Bioinformatics) students are provided with opportunities to gain work experience in the industry as well as local and international research laboratories relating to bioinformatics and health data science.

An internship can be taken as a credit-bearing course during the semester, or as a non-credit bearing experience during the summer break. The workplace learning experience will enable students to apply knowledge gained during their studies in real work environments.

理學士（生物訊息學）學生將有機會參與生物訊息學及數碼醫療相關行業之職業實習機會，並在本地和國際研究實驗室獲取科研實習機會。同學們可以於學期期間修讀學分制之實習課程，也可以選擇於暑假期間參與非學分之實習體驗。職場學習體驗幫助同學們將學習期間獲得的知識實踐到現實工作環境中。

Professional Recognition and Career Prospects
課程之專業認可及職業前景

BSc (Bioinformatics) graduates will be equipped with practical and transferable skills that are of high demand in research, hospitals and the healthcare industry, both locally and internationally.

Some examples of tasks that graduates would be able to do include:
- Interpreting genetic testing results from patients and reporting findings to help clinicians to make treatment decisions.
- Identify patterns in epidemic outbreak based electronic records of passengers on public transport in order to guide pandemic prevention strategies.
- Predicting how novel compounds interact with proteins to help identify new targeted therapies for diseases.

理學士（生物訊息學）畢業生將掌握實用及可轉移的技能，以應用在本地及國際都不斷增長的科研和醫療保健技術領域 。

畢業生將具備的職場技能如下：
- 解讀病人之基因檢測結果並作出有效匯報以幫助醫生作出治療決策。
- 透過分析公共交通工具乘客電子記錄，識別出流行病爆發的模式，以設計流行病預防策略。
- 預測新化合物如何與蛋白質產生相互作用，以幫助確立新的疾病標靶療法。

Admission Requirement
入學要求

In addition to satisfying the University entrance requirements, candidates for admission shall satisfy all of the following requirements in HKDSE:

除了符合大學基本入學要求外，本課程要求擁有香港中學文憑之申請人達到以下最低入學資格：

A Achieve the level of performance in the four core subjects as below:

於以下四個核心科目考取相對應或以上的成績水平：

SUBJECT	Min. GRADE
English	4
Chinese	3
Mathematics	4
Liberal Studies	2

B Attain a minimum of level 3 in two electives, with at least one elective subject in Biology or Chemistry or Combined Science with Biology component or Combined Science with Chemistry component.

The best 6 subjects of HKDSE will be taken into consideration for admission.

於兩科選修科目中獲取第三級或以上的成績水平，其中一科必須為生物或化學；或組合科學（包括生物）；或組合科學（包括化學）。

香港中學文憑課程之六科最佳成績將被考慮作入學用途。

Bachelor of Science in
Bioinformatics
理 學 士（生 物 訊 息 學）

Data science is now central to modern biomedical research and healthcare innovation. Our BSc in Bioinformatics programme provides essential training for future leaders in this cutting-edge discipline.

Bioinformatics covers a wide range of high impact biomedical big data applications, including genomics, precision medicine, single-cell analysis, systems biology, digital & mobile health technology, mobile health, artificial intelligence (AI) analysis of medical imaging data, electronic health record analysis, and global health & epidemiology.

數據科學是現代生物醫學研究和醫療保健創新發展的核心。本校的理學士（生物訊息學）課程，為有志於這創新尖端行業的未來領導者提供必要的培訓。

理學士（生物訊息學）課程涵蓋眾多重大的生物醫學大數據應用，包括基因組、精準醫學、單細胞分析、系統生物學、數碼及無線醫療技術、醫學影像人工智能分析、醫療大數據分析以及環球衛生與流行病學。

Curriculum Structure
課程結構

Year 1	Year 2	Year 3	Year 4

Anchoring courses
錨定課程 (18 credits)

Three anchoring courses are the centre-piece of the programme. These courses adopt a case-based problem solving approach to support interdisciplinary integration of subject-specific content at each year level (horizontal integration), and provide a consistent backbone for the curriculum across different years levels (vertical integration).

生物訊息學課程的核心部分由三門特別設計的錨定學科組成。這些課程均採用案例導向學習，以支持各年級的跨學科（橫向整合）和跨學年（縱向整合）的訓練。

BIOF1001 Introduction to Biomedical Data Sciences
BIOF2001 Artificial Intelligence in Medicine
BIOF3001 Big Data in Biomedical Informatics

Project: Capstone Experience
研習專案：核心體驗 (12 credits)

Each student is required to carry out an in-depth year-long research project in a specialised field of bioinformatics under the guidance of a supervisor.

每位學生均需要在導師的指導下，在生物訊息學的專業領域開展為期一年的深入研究專案。

BIOF4001 Final Year Project

Foundation courses
基礎課程 (36 credits)

These courses focus on concepts and practical skills in fundamental topics in bioinformatics, such as biochemistry, mathematics, statistics, and computer programming.

基礎課程著重於生物訊息學基礎範疇的概念學習以及技能實踐，包括生物化學、數學、統計學和計算機程。

BIOC1600 Perspectives in Biochemistry
COMP1117 Computer Programming
MATH1013 University Mathematics II
MATH2014 Multivariable Calculus
STAT2601 Probability & Statistics I
STAT2602 Probability & Statistics II

Disciplinary 'Data Science Laboratory' Courses
「數據科學實驗室」課程 (6 or 12 credits)

Taking an experiential learning approach, two innovative 'Data Science Laboratory' courses are offered to allow students to acquire hands-on computer programming and data analysis skills, and reinforce the underlying principles of mathematical, statistical, and algorithmic concepts through tailored dry-lab practical classes in genomics and digital health.

本課程提供兩門創新並採用體驗式學習方法之「數據科學實驗室」課程，讓同學們獲得第一身的計算機程及數據分析技能，並透過參與基因組學和數碼醫療技術實驗室的實踐課，以強化數學、統計及演算法概念的基本原理。

BIOF3002 Genome Sequencing and Data Analysis
BIOF3003 Digital Health

Common core
核心課程 (36 credits)

Language Enrichment
語言強化課程 (18 credits)

Disciplinary Elective Courses 課程選修課 (Choose any 3 or 4) (18 or 24 credits)

A wide range of specialised courses in bioinformatics, biomedical sciences, statistics and computer science can be chosen to fulfil the disciplinary elective courses. Students are required to take 3 to 4 courses from over 20 courses. Some example bioinformatics courses include:

同學們可從廣泛的專業學科中以選擇生物訊息學、生物醫學、統計學和計算機科學等學科以完成課程選修課。

Bioinformatics specialty courses
BIOF3004 Bioinformatics Internship
BIOF3005 Structural Bioinformatics
BIOF3006 Biomedical Software Systems
BIOF4002 Global Health Informatics
BIOF4003 Biomedical Image Informatics

Biomedical Sciences
BIOC2600 Basic Biochemistry
BIOC3605 Sequence Bioinformatics
BBMS2003 Human Genetics
BBMS2007 Essential Molecular Biology
BBMS3008 Essential Proteomics
BBMS3009 Genome Science
BBMS4004 Public Health Genetics

Statistics
STAT3600 Linear Statistical Analysis
STAT3612 Statistical Machine Learning
STAT4602 Multivariate Data Analysis
STAT4609 Big Data Analytics

Computer Science
COMP2113 Programming Technologies
COMP2119 Introduction to Data Structures and Algorithms
COMP3314 Machine Learning
COMP3317 Computer Vision
COMP3353 Bioinformatics

Other electives 其他選修課程 (90 credits)

Students will have the flexibility to minor in Biomedical Data Science, Digital Health, Computer Science, Statistics, minors from the Biomedical Sciences curriculum, and other minors or elective courses from across the University.

學生可彈性選擇副修生醫數據科學、數碼醫療技術、計算機科學、統計學、生物醫學或其他大學選修課程。

Programme Overview
課程概覽

The design of this BSc (Bioinformatics) curriculum recognises the wide spectrum of personal interest and diversity in career aspiration of a modern bioinformatics practitioner, ranging from biomedical researchers who are skilled at performing analysis with bioinformatics tools (bioinformatics users), to computational biologists who can perform large-scale data analyses to solve biomedical questions (bioinformatics scientists), to software developers who build innovative new computational or statistical tools for healthcare applications (bioinformatics engineers).

Students are required to complete 240 credits of courses in the four-year curriculum, of which 96 credits are major courses (Bioinformatics), 36 credits are Common Core courses, and 18 credits are Language Enhancement courses. The remaining 90 credits are for minor and electives.

理學士（生物訊息學）課程設計迎合多元化個人的個人興趣以及職業取向。生物訊息行業種類繁多，包括利用生物訊息軟件分析數據的生物醫學研究員（生物訊息學使用者）；分析大量數據以解釋生物醫學難題的計算生物學家（生物訊息學科學家）；以及開發創新醫療電腦軟件開發員（生物訊息學工程師）。

學生需要於四年制的學士課程中完成240學分的課程，當中包括主修課程(生物訊息)的96學分，大學核心課程的36學分，語言強化課程的18學分。其餘的的90個學分，同學們可以自由選擇於副修或選修課。

Diverse Modes of Learning
多元化的學習方式

Students will be exposed to a wide range of learning experiences, varying with courses they are enrolled in. These experiences include traditional lectures, data science laboratory practicals, problem-based learning tutorials, online learning, as well as research projects.

學生將從不同學科中獲取到廣泛的學習體驗。這些體驗除了傳統課堂外，還包括數據科學實驗室實踐課、案例式學習課、線上學習以及專案研究。

Minor Options and Electives
副修及選修課程

Students can plan their study with the remaining 90 credits in various manners. They may opt to take a minor and/or electives offered within the BSc (Bioinformatics) curriculum or offered in other curricula, including

同學們可以通過各種方式利用其餘的90學分來計劃自己的學習，包括選擇副修或修讀生物訊息課程中的選修學科或其他課程中提供的副修及/或選修學科。包括：

Minor in Digital Health 數碼醫療技術副修

Example courses:
- Artificial Intelligence in Medicine
- Digital Health
- Biomedical Signal Processing and Modelling in Biomedical Applications

Minor in Biomedical Data Science 生醫數據科學副修

Example courses:
- Sequence Bioinformatics
- Global Health Informatics
- Statistical Machine Learning