BSC

BIOINFORMATICS

生物信息学

CAREERS

Graduates from this programme are well prepared for positions such as bioinformatician, biostatistician, computational biologist, genetic counsellor and clinical bioinformatician, as well as other types of biological and biomedical scientist roles. Graduates can also go on to further study in related fields, such as clinical informatics, computational biology, biostatistics, molecular sciences and drug design.

START DATE
September 2023

DURATION
Three or four years

2+2 STUDY
Available

LOCATION
Suzhou

ATTENDANCE
Full time

SCHOOL
School of Science

QUALIFICATION

XJTLU
BSc Bioinformatics

University of Liverpool
BSc Bioinformatics
(hons,4+0)

BSc Biochemistry
BSc Genetics
BSc Microbiology
BSc Biological Sciences
(hons,2+2)

MODULES

YEAR ONE

UK degrees are three years long whereas in China they are four, therefore we do accept students with certain qualifications directly into Year Two, which is the start of the main academic programme. Most students, however, enter into Year One, which provides you with a range of interesting modules, language classes and core skills for your degree.

YEAR THREE

BIOSTATISTICS I
BIOINFORMATICS I
MOLECULAR AND CELL BIOLOGY TECHNIQUES
DATABASE DEVELOPMENT AND DESIGN
BIOINFORMATICS II
ADVANCED GENETICS
ARTIFICIAL INTELLIGENCE
METHODS FOR ANALYSING PUBLIC HEALTH V:BIOSTATISTICS II

YEAR TWO

INTRODUCTION TO BIOCHEMISTRY
CELL STRUCTURE AND FUNCTION
INTRODUCTION TO EVOLUTION AND GENETICS
INTRODUCTION TO PROGRAMMING IN JAVA 5
CHEMICAL PRINCIPLES OF LIFE
ALGORITHMIC FOUNDATIONS AND PROBLEM SOLVING
MOLECULAR BIOLOGY PRINCIPLES
BIOCHEMICAL METHODS AND ANALYSIS
ORGANIC CHEMISTRY FOR BIOLOGISTS
INTRODUCTION TO DATABASES

YEAR FOUR

Compulsary modules:

BIG DATA ANALYTICS
FINAL YEAR PROJECT (PHASE I)
FINAL YEAR PROJECT (PHASE II)
HIGH-THROUGHPUT BIOLOGICAL DATA ANALYSIS
BIOTECHNOLOGY
PROTEIN STRUCTURE AND FUNCTION

Optional modules:

GENE EXPRESSION AND GENOME ANALYSIS
MOLECULAR IMMUNOLOGY
BIO-COMPUTATION
MACHINE LEARNING

Xi'an Jiaotong-Liverpool University
西交利物浦大学

BSC BIOINFORMATICS

Bioinformatics combines computer science with molecular biology to give you fundamental insights into life processes. The need for bioinformatics has been triggered by huge scientific advances in collecting biological data.

KNOWLEDGE AND SKILLS

By the time you graduate from the BSc Bioinformatics programme, you will have:

- An understanding of key cell and life processes, as well as major issues and challenges in biomedical sciences

- The ability to implement cutting-edge computational techniques with modern computing devices

- An solid foundation in the the emerging field of bioinformatics, which has strong market needs and excellent employment prospects in China and international

- The knowledge to apply various experimental and computational approaches to tackle real-world biomedical problems

WHY SHOULD I STUDY BIOINFORMATICS AT XJTLU?

- Gain thorough understanding of bioinformatics and a comprehensive introduction to genetics, cell biology, applied mathematics, biostatistics and key aspects of computer science such as machine learning, artificial intelligence and big data analytics

- Benefit from XJTLU's strategic location near many biotechnology companies in BioBay, a national biotechnology hub with more than 400 companies with the opportunity for internships and work experience

- Learn in a highly international, research-active environment from academic staff trained in globally respected universities and institutes from around the world

- Enjoy prestigious scientific symposia, conferences and summer schools at the nearby Cold Spring Harbor Asia, which provides you with the ochance to interact with world-famous researchers

- Earn two degrees: an XJTLU degree from the Chinese Ministry of Education and a globally recognised degree from the University of Liverpool, a member of the Russell Group of leading UK universities

生物信息学

西交利物浦大学的生物信息学专业旨在从信息科学及生物信息学两个领域为学生提供综合性训练，以培养出能从计算科学和生物科学角度切实解释遗传信息的毕业生。

知识与技能

毕业生将获得以下几个方面的知识和能力：

- 了解关键细胞和生命过程，以及生物医学科学中的主要问题和挑战
- 利用现代计算设备实现尖端计算技术的能力
- 在新兴的生物信息学领域奠定了坚实的基础，在中国和国际市场需求强劲，就业前景广阔
- 应用各种实验和计算方法来解决现实生物医学问题的知识

专业特色

- 深入了解生物信息学，全面介绍遗传学，细胞生物学，应用数学，生物统计学和计算机科学的关键领域，如机器学习，人工智能和大数据分析
- 西交利物浦大学位于苏州工业园区内，毗邻众多生物科技企业。近年来，苏州工业园区迅速成长为中国最好的生物制药研发基地，并建立了生物纳米园，后者引进了大批国际性和专业性的科研资源，为生物科技和医药研发提供了先进的基础设施和尖端设备
- 拥有一支由国际知名学术专家组成的教职团队，享有高度国际化和浓厚的科研氛围
- 毗邻冷泉港亚洲会务所在地，冷泉港亚洲会务在苏州工业园区举办了许多具有国际影响力的科研会议、学术会议和夏令营，为学生提供了与国际知名研究人员互动的机会
- 毕业生可获得中国教育部认可的西交利物浦大学学位和国际认可的利物浦大学学位

就业

该计划的毕业生为生物信息学家，生物统计学家，计算生物学家，遗传咨询师和临床生物信息学家等职位以及其他类型的生物和生物医学科学家角色做好了充分的准备。毕业生还可以继续在相关领域进一步学习，如临床信息学，计算生物学，生物统计学，分子科学和药物设计。

开始时间 2023年09月	**学院** 理学院
学制 四年	**学位证书** 西交利物浦大学 生物信息学 利物浦大学 BSc Bioinformatics (hons,4+0) BSc Biochemistry BSc Genetics BSc Microbiology BSc Biological Sciences (hons,2+2)
2+2 留学模式 可选	
学习地点 苏州	
教学形式 全日制	

课程

第一学年

在英国，本科阶段学习学制三年，而中国本科阶段学制为四年。因此，对于已获得相应学时、证书的学生，在我校可以直接升入二年级进行专业学习；大多数学生则是进入一年级学习，包括众多有吸引力的课程，语言课程以及专业学习相关的核心技能学习。

第三学年

分子及细胞生物学技术
生物统计学 I
数据库开发与设计
生物信息学 I
生物信息学 II
高级遗传学
生物统计学 II
人工智能

第二学年

生物化学导论
细胞的结构与功能
进化与遗传学导论
JAVA程序设计导论
生命的化学原理
算法基础与问题求解
分子生物学原理
生物化学方法与分析
生物学有机化学
数据库导论

第四学年

大数据分析
高通量生物数据分析
生物技术
蛋白质的结构与功能
基因表达与基因组分析
分子免疫学
仿生计算
毕业设计

XJTLU

UNDERGRADUATE

BSC BIOINFORMATICS
生物信息学

Bioinformatics combines computer science with molecular biology to give you fundamental insights into life processes. The need for bioinformatics has been triggered by huge scientific advances in collecting biological data.

As the key to extracting meaningful information from this data, bioinformatics is essential for an in-depth understanding of human diseases as well as for the identification of new molecular targets and therapeutic molecules for drug discovery.

You will graduate with the knowledge and skills to tackle real-world life science problems from an informatics and computational perspective.
The programme offers three study pathways, allowing you to tailor programme to your strengths and interests. After Year Two, you have three options:

1. Continue to study bioinformatics at XJTLU (with computational content emphasised)

2. Continue to study more traditional molecular bioscience modules at XJTLU (with lab-based courses and biological content emphasised).

3. Study traditional molecular bioscience modules at the University of Liverpool in the United Kingdom (with lab-based courses and biological content emphasised).

生物信息学将计算机科学与分子生物学相结合，培养学生对生命过程的基本见解。生物信息学的需求是由收集生物数据的巨大科学进步引发的。

作为从这些数据中提取有意义信息的关键，生物信息学对于深入了解人类疾病以及鉴定用于药物发现的新分子靶标和治疗分子至关重要。

学生可以获得从信息学和计算的角度解决现实世界生命科学问题的技能。
本专业分为两个阶段，每个阶段研修两年。在第二学年结束时，学生有3个选择：

1. 继续研修生物信息学专业（强化包括机器学习、人工智能、大数据分析等课程和计算科学内容）；

2. 前往英国利物浦大学研修"2+2"培养模式下的传统分子生物学课程（强化实验课程和生物学内容）；

3. 留在西交利物浦大学研修"4+X"培养模式下的传统分子生物学课程（强化实验课程和生物学内容）。