

BSC / BENG

BIOPHARMACEUTICALS

生物制药

CAREERS

Students pursuing a BSc/BEng Biopharmaceuticals degree will have access to a number of exciting career options:

- continue studies at a prestigious university in China or internationally;
- engage in resource development, product development, drug quality control, drug production technology management, validation or other work related to biological drugs;
- participate in biopharmaceutical research and development (R&D), production, or operation and management in entities including biopharmaceutical production and management enterprises, biopharmaceutical research and development units, drug control institutes and drug administration departments, bioengineering companies, or other workplaces related to biopharmaceuticals;
- join a hospital or scientific research institute engaged in research; and work in biopharmaceutical sales and education or other careers in public health such as food and drug administration, disease control, or community health.

Main employment fields: biopharmaceutical companies, biotechnology companies, medical device companies, consulting companies, investment companies, medical testing institutions, hospitals, government agencies, etc.

MODULES

YEAR ONE

In the UK, undergraduate programmes typically last three years, whereas in China, they normally span four years. Accordingly, at Xi'an Jiaotong-Liverpool University (XJTLU), students who have already obtained the required credits and qualifications may be admitted directly into Year 2 of their chosen programme. The majority of students, however, enter Year 1, where they take foundation courses that include language training, basic mathematics, and subject-specific preparatory modules.

YEAR TWO

Compulsory modules:

- CHEMISTRY FOR PHARMACY
- KEY SKILLS FOR PHARMACEUTICAL SCIENCES
- FUNDAMENTAL BIOCHEMISTRY IN PHARMACY
- INTRODUCTION TO PHYSIOLOGY AND PHARMACOLOGY
- BIOLOGY FOR PHARMACY
- PRACTICAL MOLECULAR BIOLOGY FOR PHARMACY
- PHYSICAL CHEMISTRY FOR PHARMACY
- ARTIFICIAL INTELLIGENCE IN HEALTHCARE & PHARMACEUTICAL RESEARCH
- PHARMACEUTICAL LEADERSHIP: FROM CONCEPT TO MARKET
- THE BIOLOGY OF MICROBES

YEAR THREE

Compulsory modules:

- MEDICINAL CHEMISTRY
- PRINCIPLE OF CHEMICAL ENGINEERING
- BIOPHARMACEUTICS AND BIOPHARMACEUTICAL TECHNOLOGY
- PHARMACEUTICS
- PHARMACEUTICAL ANALYSIS
- PHARMACEUTICAL SEPARATION AND FERMENTATION ENGINEERING
- PRINCIPLES OF PHARMACOLOGY
- ADVANCED BIOCHEMISTRY
- GENOME EXPRESSION AND MAINTENANCE

YEAR FOUR

Compulsory modules:

- BIOTECHNOLOGICAL PHARMACEUTICS
- COMPUTER AIDED DRUG DESIGN
- BIOPHARMACEUTICAL ENGINEERING
- REGULATORY SCIENCES AND PROJECT MANAGEMENT
- PHARMACEUTICAL EQUIPMENT AND ENGINEERING DESIGN
- PRINCIPLES OF GXP
- AUTOMATION SOLUTIONS FOR THE PHARMACEUTICAL INDUSTRY
- FINAL YEAR PROJECT
- MOLECULAR IMMUNOLOGY

BSC / BENG BIOPHARMACEUTICALS

Biopharmaceutical research is essential for every family and for the economy. XJTLU's BSc / BEng Biopharmaceuticals programme rides the tide of biotech innovation and bridges theory with practice by leveraging the industrial resources of the BioBay in Suzhou. Here, students gain deep insights into the R&D of various drugs and explore cutting-edge fields like antibodies and cell therapy. With the support of an international faculty, every student can become the new generation of pharmaceutical innovators and make a difference in the fight against diseases!



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KNOWLEDGE AND SKILLS

This four-year program will provide students with the following knowledge and skills:

- Solid basic knowledge of biology, pharmacy and chemistry, as well as an understanding of the latest developments and trends in biopharmaceuticals;
- Proficiency in fundamental theories; relevant professional knowledge and basic skills in medicine, pharmaceutical chemistry, biopharmaceuticals, and molecular biology; and biopharmaceutical and pharmaceutical administration;
- A solid mathematical and biopharmaceuticals foundation for further study;
- Basic knowledge and understanding of the methods of applying modern biotechnology to research and development of biopharmaceuticals;
- Capability to use theoretical knowledge and technology to study and solve problems related to biopharmaceutical development;
- Understanding of the limitations and complexity of biopharmaceutical applications, with the ability to analyse and optimise experimental methods; and ability to design, execute and analyse test results; process data; and draw scientific conclusions.

WHY SHOULD I STUDY BIOPHARMACEUTICALS AT XJTLU?

The programme focuses on cultivating biopharmaceutical professionals with international perspectives and capabilities and provides opportunities for further study, so that graduates can become innovative, multi-talented and application-oriented professionals.

- Unique teaching methodology: XJTLU emphasises the development of students' independent and research-led learning abilities. The University's unique teaching methods integrate the best of three higher education systems: the Chinese system's focus on a concrete foundation, the British system's rigorous quality assurance methods, and the American system's flexibility and focus on innovation. In addition, the cluster of biopharmaceutical enterprises in Suzhou Industrial Park provide an advantage, enabling the Academy to hire professionals from nearby pharmaceutical companies to participate in teaching and learning design, ensuring the integration of teaching and practice.
- Seamless integration of education and industry: The Academy strives to continuously improve the quality of its teaching and talent training. Entrepreneurs and professionals from pharmaceutical companies are employed to contribute to curriculum design and students' education, which includes not only academic teaching and experiments, but also opportunities for practical application and team collaboration.
- An international faculty team of academic and industry experts: The Academy has employed the founders and senior research and development (R&D) personnel of biopharmaceutical enterprises as adjunct professors. In addition, our academic staff with practical biopharmaceutical experience teach our key modules. These practices enable us to integrate biopharmaceutical practice into our teaching and training. Leading professionals from biopharmaceutical enterprises participate in developing teaching content, linking the Academy to internships, and creating other practical experiences for students.
- Internship and training opportunities at the forefront of development: The Academy has established strategic relations with well-known Chinese biomedical companies, providing students with opportunities to experience front-line production research first-hand.
- Industry standard equipment covering all stages of biopharmaceutical research and development: To prepare undergraduate talents for a future in modern pharmaceutical R&D and production, the laboratory and other equipment meets international and industrial standards, covering biopharmaceutical R&D through drug discovery, drug modification, drug expression, drug purification, and drug efficacy evaluation in different stages. The cutting-edge facilities and tools will expand students' horizons along with their basic knowledge, and enhance their abilities to participate in leading biopharmaceutical development R&D.

生物制药

生物医药的一端连着经济脉搏，一端连着万家灯火。西浦生物制药专业紧跟生物科技发展的浪潮，借力苏州生物医药产业园雄厚的产业资源，让理论融于实践。在这里，能深入了解生物药品的研发历程，探索抗体药物、细胞治疗等多个前沿领域，还能得到国际化师资团队的保驾护航，助力每一位学子成为新一代医药创新人才，用专业力量为民生健康添砖加瓦！



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June 8, 2026
具体信息以官方网站为主
Please refer to the official website for specific programme information

知识与技能

经过四年的系统学习，本专业毕业生将具备以下知识和能力：

- 具备扎实的生物学、药学以及化学基础知识，了解本专业领域的发展现状和趋势
- 熟练掌握医学、药物化学、生物制药、生物药剂、分子生物学、生物制药药事管理等基础理论和相关专业知识及基本技能
- 具有继续深造的坚实数理基础与专业基础
- 掌握运用现代生物技术进行生物制药研发的基础知识和基本方法
- 具有综合运用所学理论知识和技术，研判生物制药过程中的问题及解析能力
- 了解生物制药在实际应用中的局限性及复杂度，具有一定的分析和优化实验方法的能力
- 具有一定的试验设计、执行和分析试验结果、数据处理、以及形成科学结论的能力

专业特色

生物制药本科专业注重培养具有国际化视角和能力的生物制药专业人才，并提供更多深造机会，使毕业生成为创新型、复合型和应用型的专业人才。

- 严格完善的教学质量控制体系、独特的授课模式。融合中国教育重视理论和基础的特点，采用英国严谨的高等教育质量保障体系，并借鉴美式教育的灵活性和创新性特征，强调对学生自主学习和研究导向型学习能力的培养。此外，借助苏州工业园区生物药企集群的优势，学院聘请了药企实干家参与到授课模式的设计之中，保证教学与实践的有机融合。
- 与行业无缝对接的课程设计。学院以全面提高教学质量和人才培养质量为目标，聘任了多位来自制药公司一线的创业者和专业人员参与到课程设计和课程教学中，这不仅包含知识传授和经典案例实验，更增加了有益的实际应用和小组团队协作，使学生获得最佳的学习效果和今后的实践工作能力。
- 生物制药领域内学术专家和行业专家组成的国际化师资队伍。本专业聘任生物制药企业的创始人和高级研发人员为校外导师，教学培养结合生物制药实践，重点课程由具备专业实操能力的教师担任，在教学内容方面，每一门学科都有来自企业一线的专业人才参与教学内容、实习等环节，为学生创造更多的实际操作经验和实地演习机会。
- 一线实习实训机会。学院目前已经与国内知名生物医药公司建立战略合作关系，为学生在实习期间接触到生产研究的一线实践提供机会。
- 覆盖生物制药研发各阶段的高标准教学设备。为了培养符合现代医药研发生产的合格本科人才的目标，本专业的教学仪器设备对标国际和产业标准，覆盖了生物制药研发从药物发现、药物修饰，药物表达，药物纯化，以及药物功效评价的各个阶段，拓展学生除基础知识以外对生物制药领域的广阔眼界，增强学生参与一线生物药物研发的基础能力。

就业

生物制药专业的本科毕业生可以：

- 选择赴海内外名校相关专业继续深造；
- 从事生物药的资源开发、产品研制、药品质量控制、药品生产技术管理、验证等工作；
- 在生物药生产经营企业、生物药研制与开发单位、药检所及药政管理部门、各类生物工程公司等与生物制药专业相关、相近的领域内从事生物制药研发、生产、经营与管理等工作；
- 进入医院或科研院所从事科研类工作；进入食品药品监督管理局、疾病控制中心、社区卫生机构、检疫机构等公共卫生部门从事药品普及教育等工作。

主要就业领域：生物制药公司、生物技术公司、医疗器械公司、咨询公司、投资公司、医疗检测机构、医院、政府机关等。

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，对于已获得相应学分、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进行基础课学习，主要课程包括语言课程、基础数学课程和专业相关的预备课程。

第二学年

核心课程
药学基础化学
药物科学关键技术
基础药理学学生物化学
生理与药理学导论
药学生物学
药学应用分子生物学
药物物理化学
医疗健康和药物研发中的人工智能
医药行业领导力：从概念到市场
微生物生物学

第三学年

核心课程
药物化学
化工原理
生物药剂与生物制药技术
药剂学

药物分析
药物分离与发酵工程
药理学原理
高级生物化学
基因组表达和维护

第四学年

核心课程
生物技术制药
计算机辅助药物设计
生物制药工程
监管科学和项目管理
制药设备和工程设计
GxP原则
制药行业自动化解决方案
毕业设计
分子免疫学

BSc/BEng Biopharmaceuticals 生物制药

With advancements in pharmaceuticals rapidly expanding worldwide, the pharmaceutical industry has grown at an unprecedented rate. Demand for pharmaceutical talents, especially those who master advanced technology and applied professionals, is growing rapidly. The BSc/BEng Biopharmaceuticals programme aims to cultivate professional talents with the following qualities: high-level knowledge and skills in biopharmaceuticals; passion for life sciences; solid knowledge of basic biology, pharmacy and chemistry; mastery of basic theory as well as specialised understanding and basic skills in areas including medicine, pharmaceutical chemistry, biopharmaceuticals, biological pharmacy, molecular biology, and pharmaceutical management; good command of the English language (especially text writing and literature retrieval) and computer skills; ability to conduct biological, chemical and pharmaceutical experiments; ability to engage in investment and financing or management of pharmaceutical or biopharmaceutical-related industry analysis, product development and services in international biopharmaceutical enterprises in China or internationally; solid mathematical and specialised academic knowledge and skills that will provide a strong foundation for further study; an innovative and cooperative outlook; practical abilities; and a motivation for social responsibility.

随着前沿医药领域在国内外加速增长，行业呈现出蓬勃发展之势，制药人才需求，特别是掌握高级技术的应用型专业人才并喷式增长。生物制药专业旨在培养具有良好的生物制药职业素养，热爱生命科学，具备扎实的生物学、药学以及化学基础知识，熟练掌握医学、药物化学、生物制药、生物药剂、分子生物学、药事管理等基础理论和相关专业知识及基本技能，具备良好的外语水平以及熟练的计算机（尤其是文本书写和文献检索）、生物、化学及药学实验能力的专业人员；为内外资生物医药企业、医院或科研院所，以及食品药品监督管理局、疾病预防控制中心、社区卫生机构、检疫机构等政府公共卫生部门培育具备生物制药相关行业分析、相关产品开发与服务等业务的药事、投融资或管理骨干；打造具有继续深造的坚实数理与专业基础，具有创新及团队合作精神、实践能力和社会责任感的专业人才。

