

Zhejiang Sci-Tech University

Research Master ' s Degree Program Outline

Biology

071000

The 21st century is the century of life science, and the high-tech industry of biotechnology has become one of the leading industries of the 21st century economic growth. The development of biotechnology product with independent intellectual property rights is the priority of the biotechnology industry in our country. In the increasingly competitive era, the key to solve the urgent task of biotechnology industry development is the international high-level personnel training. In Zhejiang Sci-Tech University, the major of biochemistry and molecular biology began to recruit master graduate student since 2004. Up to now, it achieved much good experience for training graduate.

Biotechnology is one of the most active high-tech in the field of application, also is one of the highest growth industry. The biological and medicine industry developed rapidly, its output value was over one trillion yuan in 2009. Thus, the governments have attached great importance to the development of biological industry in our country, especially in the fields of biological technology innovation and the cultivation of professional talents of internationalization. Therefore, fostering international biology talents for the society was not only conforms the development and the establishment of the biological medicine port in our province, but also the strategy for benefit industry development in our country.

The Biochemistry and Molecular Biology discipline of Zhejiang Sci-Tech University was approved to award Master Degrees by the Academic Degree Committee of the State Council of China. It is one of the Top-Key Disciplines sponsored by government of Zhejiang Province. It has obtained remarkable achievements and won a great number of honors in the Biochemistry and Molecular Biology field. Within this discipline, there are many key laboratories and disciplines, e.g. Biology Key discipline of Zhejiang province, Botany key subject of colleges and universities in Zhejiang province, Zhejiang Key Laboratory of Silkworm Bioreactor and Biological medicine, Gene therapy center of Zhejiang Province, with advanced apparatus and equipment covering all aspects of biology, molecular biology and cell biology.

I. Objectives

(1) Develop the friendship with People's Republic of China through learning and understanding the laws, system, society and culture, etc., of China.

(2) Promote the capability of scientific research and professional work in Biochemistry and Molecular Biology area.

(3) Master Chinese language, own the ability of using Chinese to read technical literature and professional exchange.

II. Research Areas

1. Biochemistry and Molecular Biology, molecular biology of silkworm baculovirus

2. Tumor cell biology and tumor targeting gene-viral therapy

We focus on the fields of development of novel drug for Cancer targeting Gene-Viral Therapy, molecular mechanism of cancer formation, development etc.

3. Ecology and botany, secondary botany metabolism

4. Microbiology and botany virus

5. Biological pharmacy and silkworm bioreactor

The main research focuses on genetic engineering pharmaceuticals, especially using silkworm pupae as a bioreactor. *B. mori* has been used as a bioreactor for the production of recombinant proteins using the BmNPV expression system. Baculoviruses do not infect vertebrate animals, and the system itself is safe. These features make the silkworm system an ideal expression and delivery package for producing medicinal proteins for oral administration. This expression system is inexpensive, convenient and produces large amounts of proteins. This system has been widely used to express recombinant proteins.

6. Enzymology and Proteomics

Applying Mass spectrometry-based proteomic technology to identify protein target or protein posttranslational modification that associate with disease, such as cancer biomarkers or bacterial effector proteins that mediate signal transduction of host cells. We have MALDI-TOF and LC-MS mass spectrometry in our lab.

7. Bioinformatics

8. Biomaterials

III. Length of Study

The normal study length for full-time research postgraduates is 3 years. Students who finish their courses ahead of schedule and attain the standards of degree conferment can, after approval, apply for the degree at an earlier time (not earlier than 3 years), while the maximum length of schooling is 5 years.

IV. Credit Requirements

The course-learning phase of the master ' s degree program adopts credit system. Students majored in science and engineering are required to take at least 33 credits, with at least 19 credits of degree courses; while students majored in arts, economics, management, law and education are required to take at least 34 credits, with 21 credits of degree courses. Language Requirements: HSK 3 or above.

V. Curriculum

Course Classification		Course Code	Course Name	Hour/ Credit	Semester			Notes
					I	II		
Degree courses	General degree courses	FL10015	The Outline of China*	36/2				(Entirely in English)
		CC10009	Basic Chinese (I)	54/3				(For beginners of Chinese language among foreign graduate students)
		CC10010	Basic Chinese (II)	36/2				(For beginners of Chinese language among foreign graduate students)
		FL10026	English Writing of Academic Paper	16/1				
		IF10001	Education on China's National Conditions for International Students A	16/1				
	Major-related degree courses	BS11024	Advanced Cell Biology*	48/3				
		BS11025	Advanced Molecular Biology*	48/3				
		BS11026	Advanced Biochemistry*	48/3				
		BS11027	Advanced microbiology*	48/3				
Non-degree courses			All optional courses in the university curriculum are open to students of this program.					
Additional courses								For students without an equivalent bachelor ' s degree

Others	Academic Seminar	/1	separated
	Academic Report	/1	separated
	Practical Training		Students are required to take at least 2 weeks practical training, participate in at least one social investigation, and write relevant report. Normally the training should be completed in the first academic year.
	Thesis Proposal		The 3rd semester
	Thesis Writing		The 3rd-6th semester

C=Compulsory, O=Optional

* Students can decide whether to take this optional course or not according to their different research area.

VI. Dissertation Requirement

Dissertation for academic master degree is an important part of the program of the master degree students. The purposes of the dissertation include training the postgraduate students to undertake scientific research and professional technical activities, promotion of student ' s ability of scientific innovation, and problem shooting, analysis and solution. The postgraduate students will be encouraged to undertake the scientific research projects organized by the supervisors. The dissertation is assumed to have important academic or practical application values with novel scientific ideas. Following are important points which should be observed to guarantee the quality of the dissertation:

(1) The dissertation should put forwards novel scientific ideas on essential theory, calculation methods, testing technology and manufacturing processes, or solve some practice problem in technology or engineering with existed theory or new scientific and technical achievements. And the dissertation should have important academic or practical application values.

(2) The postgraduate students need to select a research direction when entering the school with the help of supervisors, and determine the research project for dissertation after searching the literatures and performing investigation, etc. and then complete the dissertation opening report during the third semester(generally during week 9 to 10).

(3) The postgraduate students should complete the dissertation independently under the instruction of supervisors.

(4) The postgraduate students should meet the needs of paper publishing before the oral defense of the dissertation according to the Requirement of Publishing Papers for Master Degree Students of Zhejiang Sci-Tech University.

(5) The dissertation should be edited and printed by the computers with the format referring to the Criterion of the Dissertation for Academic Master Degree of Zhejiang Sci-Tech University.

VII. Teaching Format

Supervisors or a supervising group of teachers will tutor the postgraduate students for academic master degree.

VIII. Graduation & Degree Conferment

Students who meet the standards of graduation, having completed the required courses, passed the examinations within the study duration, passed the Chinese Proficiency Test (HSK) and obtained the Level 3 Certificate and successfully defended their thesis, will be awarded the graduation certificate; those who meet the standards of academic degree conferment and are approved by the university academic degree evaluation committee, will be conferred the corresponding degree.

Signature of Program Director:

Signature of Director of School Academic Degree Committee:

Date: