

# Department of Biotechnology and Pharmaceutical Technology

## Introduction

### History

The Department is the first institute emphasizing both biotech and pharmaceuticals in Taiwan, and rated as first-class in the evaluation by the Ministry of Education in Taiwan. The goals of our department are to develop students with biotechnology and hands-on experiences so that students can be engaged in the practical operation and management of the biopharmaceutical industry.

### Features

#### Curriculum

Both theory and practical training are emphasized. The idea of developing practical products for industry is accomplished through our teaching and research and development (R & D) sectors. Functional analysis and preproduction evaluation have been major tasks in our R & D centre for biotech healthcare products. There are over 40 alliances signed with strategic and industry-university co-operation. Through close joint programs with these institutes and corporations, enrolled students have better opportunities for internships and successful careers. Moreover, students can also benefit from special international programs for practical training, and student exchange programs with distinguished universities.

Students can pursue a higher degree in related fields domestically or internationally. They can also play important roles in R & D in the government sector, work in R & D, QC, production lines in biotech, pharmaceutical, food, cosmetic companies, and hospitals.

#### Faculty

The faculty and staff in the Department of Biotechnology and Pharmaceutical

Technology maintain diverse life science and technology, and they were well educated with good lab skills for lab and industrial. Currently 13 full-time teaching faculty members in this department, containing 3 professors, 4 associate professors, 5 assistant professors, and 1 instructor.

### Facilities

The Department has established 14 teaching and research laboratories equipped with basic and advanced instruments such as PCR reactor, 5L-fermenter, confocal microscopy, gas chromatograph-mass spectrum (GC-MS), GC, high-performance liquid chromatography (HPLC), Fourier transform infrared spectroscopy (FT-IR), etc., and will continuously purchase equipment, including real-time PCR, UV-spectrophotometer, fluorescence spectrophotometer, for lab and training sessions. This will prepared students getting ready for research institutes, or industrial. PCs, notebooks, LCD projectors and cameras for the purpose of teaching and seminar discussion to enhance their abilities in presentation.

### Career Development

Students can pursue a higher degree in related fields domestically or internationally. They can also play important roles in R & D in the government sector, work in R & D, QC, production lines in biotech, pharmaceutical, food, cosmetic companies, and hospitals.

### Degrees Offered

■ Bachelor   ■ Master

# Mission & Objectives

## Educational Objectives

Program	Objectives
<b>Undergraduate</b>	<ol style="list-style-type: none"> <li>1. Based on the previous technology, new pharmaceutical biotechnology is also employed in our teaching and training goals.</li> <li>2. Curriculums are well designed with genetic transformation, fermentation for microbiology, cell culture, production technology, drug formulation.</li> <li>3. Training students for technicians and QC officers for domestic medical companies, biotech industrial, as well as food supplement or medical production.</li> <li>4. Combing knowledge obtained from courses and techniques acquired from lab sessions to establish students' abilities in Biotech sector and other medical related fields.</li> </ol>
<b>Graduate</b>	<ol style="list-style-type: none"> <li>1. Solving potential issues in lab and/or industrial environment.</li> <li>2. Being independently, and problems solving.</li> <li>3. Professional communication skills.</li> <li>4. International networking.</li> </ol>

## Core Competences

Program	Competences
<b>Undergraduate</b>	<ol style="list-style-type: none"> <li>1. Knowledge of basic life science</li> <li>2. Lab techniques for Biotech and Pharmaceutical</li> <li>3. Business/ industrial management and quality control</li> </ol>
<b>Graduate</b>	<ol style="list-style-type: none"> <li>1. Being able to comprehend potential issues in lab and/or industrial environment.</li> <li>2. Thinking independently, and problems solving.</li> <li>3. Presenting and communicating in English.</li> <li>4. Attending international professional conference.</li> </ol>

# Curriculum

Undergraduate Program of Department of Healthcare Management, Yuanpei University (Academic Year 2014)			
Year 1			
Required	Credits	Elective	Credits
Chemistry (1)	2	Biotechnology for Cosmetics	2
Chemistry Experiment (1)	2	and Functional Foods	
General Biology	2	Foundation Calculus	2
Biology Experiment	1	Introduction of Herbal Medicine	2
General Physics	2		
Introduction of Biotechnology	2		
Microbiology	3		
Microbiology Experiment	1		
Chemistry (2)	2		
Chemistry Experiment (2)	1		
Year 2			
Required	Credits	Elective	Credits
Analytical Chemistry	2	Herbal Medicine: Development	2
Biochemistry (1)	3	and Application	
Biochemistry Experiment	3	Physiology	2
Organic Chemistry	3	Introduction to Nan	2
Applied Microbiology	3	biotechnology	
Biochemistry (2)	3	Applied Botany	2
Instrumental Analysis	2	Dermatological Aesthetology	2
Powder Sciences and Lab	1	Microscopic Techniques	2
Pharmacology	2	Engineering Mathematics	2
Biotechnology Lab	1	Practical Lab Skills for Biotech	3
Solid Dosage Forms Design	1	(1)	
and Lab		Crop Cultivation and Lab	2
Pharmaceutics I	2	Physical Chemistry	
		Health Management	2
		Plant Physiology (with lab)	2

		Mushroom: Culture and Application	3
		Practical Lab Skills for Biotech (1)	2
			0
Year 3			
Required	Credits	Elective	Credits
Molecular Biology Lab	1	Plant Management	2
Molecular Biology	3	Nan biotechnology in cosmetics	2
Semisolid Dosage Forms Design and Lab	1	Professional English for Biopharmaceutics (1)	2
Biostatistics and Software	2	Practical Lab Skills for Biotech (2)	1
Cell Biology	3	Enzymology	2
Pharmaceutics II	2	Nutrition	2
Bioinformatics	2	Industrial Safety	2
Liquid Dosage Forms Design and Lab	1	Practice of Biopharmaceutics	2
Plant Tissue Culture Lab	1	Biomaterials	2
Pharmaceutical Analysis	2	Immunology	2
		Cosmetic Manufacture Laboratory	2
		Professional English for Biopharmaceutics (2)	2
		Tissue Engineering Technology	1
		Practical Lab Skills for Biotech (3)	
		Genetics	2
		Pharmaceutical Analysis and Lab.	2
		Pharmacokinetics	2

Year 4			
Required	Credits	Elective	Credits
Experiential Lecture in Biopharmaceutical Industries	1	Cosmetic delivery of technology	2
Seminar (1)	1	Biotech Products Marketing and Services	2
Individual Study/ Internship(1)	2	Biotechnology Machinery	2
Good Manufacturing Practice(GMP)	2	Practice of Biopharmaceutical Skills	2
Patent and Biopharmaceutical Law	2	Introduction of Biomass Power	2
Seminar (2)	2	Genomics and Proteomic	2
	1	Structural Biology	2
		Good Laboratory Practice (GLP)	2
		Industrial pharmacy	2
		Management of Biotechnology industry	2
		Biochip	2
		Enterprise Internship	8
		Tea Process and Utility	2
		Individual Study/ Internship(2)	
		Individual Study	
		Chemical Manufacturing	2
		Controls	2
		GMP for Pharmaceutical	1
		Company	2
Graduate Program of Department of Healthcare Management, Yuanpei University (Academic Year 2014)			
Year 1			
Required	Credits	Elective	Credits
Technical Writing (1)	2	Special Topics of Molecular Biology	2
Technical Writing (2)	2	Special Topics in Biochemistry	2
Special Biopharmaceutics	2	Bioinformatics	2
Experimental Research of Biopharmaceutical Technology I	2	Signal Transduction	2
Experimental Research of Biopharmaceutical Technology II	2	Topic of Instrumental Analysis	2
		Bio-Materials	
		Cell Culture and Analysis	2
	1	Technology	

Experiential Lecture in Biopharmaceutical Industries I		Computer Aid For Experimental Analysis	2
Advanced Topics in Biotechnology	2	Pharmaceutical Dosage Form Design	2
Seminar (1)	1	Advanced Functional Molecules	2
Seminar (2)	1		
Year 2			
Required	Credits	Elective	Credits
Experimental Research of Biopharmaceutical Technology III	2		
Experiential Lecture in Biopharmaceutical Industries II	1		
Seminar (4)	1		
Seminar (3)	2		
Experimental Research of Biopharmaceutical Technology IV	6		
Thesis			

## Faculty and Staff

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## Research

The Department is the first institute emphasizing both biotech and pharmaceuticals in Taiwan, and rated as first-class in the evaluation by the Ministry of Education in Taiwan. Both theory and practical training are emphasized in our department. Our research in cooperation with industrial, basic researches, and developing techniques are also undergoing. For technical school like Yuanpei University, we especially focus on practical experience and products in teaching and training course. The idea of developing practical products for industry is accomplished through our teaching and research and development (R & D) sectors. Functional analysis and preproduction evaluation have been major tasks in our R & D centre for biotech healthcare products. There are over 40 alliances signed with strategic and industry-university co-operation. Through close joint programs with these institutes and corporations, we believe that our research have better opportunities in many aspects.