Department of Biomedical Engineering

Introduction

History

Department of Biomedical Engineering (BME) of Yuanpei University was accredited by the Ministry of Education in 1994, and started to admit undergraduate students in 2000. After that, a graduate program was approved in 2012. The success story of the Department already spans for more than two decades. BME is rated as first-class in the evaluation by the Ministry of Education in Taiwan.

Features

Curriculum

The focus of this course is to combine biomedical theory and practice. Students are able to practice their skills in laboratories equipped with state of the biomedical technical equipment, hospitals and medical device company. Students also learn how to create the artificial skin and splint and are responsible for designing remote controlled electrical wheelchairs and other assistive tools to assist individuals with their mobility and independence. Other projects include designing and developing cardiac (EKG) monitoring equipment, electroencephalogram (EEG) machines, and limb prosthetics.

Faculty

The faculty and staff in the department maintain diverse biomedical electronics and biomedical mechanics, and they are also good at their skill sets with these technologies. The number of full-time teachers at the department is 10, containing 4 associate professors, 4 assistant professors, and 2 lecturer.

Facilities

The Department will continuously purchase professional equipment, such as multichannel biosignal measurement modules, FPGA develop system, promotion analysis equipment and biomaterial testing instrument for the purpose of teaching and researching.

Career Development

1. Students can pursue a higher degree in biomedical engineering-related fields at home or abroad.

2. Students can find jobs as inspectors or researchers in medical treatment institutions, government, or related institutions.

3. Students can be engaged in research, development, and maintenance work related to electronics, IT, and machines.

Degrees Offered

■Bachelor ■Master

Mission & Objectives

Educational Objectives

Program	Objectives
Undergraduate	1 Equips students with professional biomedicine and engineering knowledge, cultural literacy and technological creativity. 2. Emphasizes practice-based development supported with theory to equip students with operational skills, along with the design, maintenance and marketing abilities. 3. Cultivates students' abilities of design and development, manufacturing and improvement, assessment and procurement, installation and maintenance, as well as detection and verification in connection with assistive devices.
Graduate	4. Students of this department are qualified to solve the problems of biology, medicine or engineering in the course of medical instrument design. 5. The overall curriculum design emphasizes to cultivate cross-field technology and medical engineering talents with professional quality and ability as well as competency in system integration.

Core Competences

Program	Competences
Undergraduate	1. Possess the theoretical foundation of professional management. 2. Possess the ability of teamwork, analysis, and solving problems. 3. Possess the professional knowledge of biomedical and engineering. 4. Possess the practical technologies on biomedical engineering who could work at designing, setting up, and fixing jobs of biomedical instruments.
Graduate	1. Possess the capacities of humanism and science creation profession. 2. Possess ability to analyze and solve problems.

Curriculum

Undergraduate Program of Department of Biomedical Engineering, Yuanpei University(Academic Year 2014)

Year 1

Required	Credits	Elective	Credits
Calculus (1)(2)	3	General Chemistry	2
Introduction of Biomedical Engineering	3	Computer Aided Design of Medical Devices (M)	3
Electric Circuits	3	Digital Electronics	3
University Physics (1)(2)	2		
General Biology	2		
Digital Electronics Laboratory	1		
Principle and Experiment of Human Anatomy	2		
Lab of Fundamental of Computer	1		

Year 2			
Required	Credits	Elective	Credits
Electronics Laboratory (1)(2)	1	Linear Algebra	3
Engineering Mathematics	3	Biomaterials (M)	3
(1)(2)	3	Medical information Network (E)	3
Physiology	1	Vector Analysis	3
Programming and	3		
Implementation	3		
Material Science	3		
Electronics (1)(2)	1		
Biomechanics	1		
Physiology Experiment			

Year 3			
Required	Credits	Elective	Credits
Medical Measurement and	3	Rehabilitation and Assistive	3
instrumentation (1)(2)	3	Devices	3
Signal and System	1	Biomaterial Engineering	3
Microprocessor Laboratory	1	G Programming Language	3
(1)(2)		Principle of Microprocessor	3
Biomedical Engineering		Installation and Maintenance in	3
Laboratory (1)(2)		Medical Instrumentations	3
		Numerical Analysis	3
		Biomedical Digital Signal	3
		Processing	3
		Embedded System	
		Finite Element Method	
		Rheology of Blood	

Year 4			
Required	Credits	Elective	Credits
Special Project (1)(2)	1	Computer in Medical Engineering	2
		Application	3
		Medical Device Quality System	3
		Micro-and Nano-scale Thermal	3
		Fluid in Bioengineering	3
		Bio-Technology	3
		Cardio Dynamics	3
		Medical Imaging Equipment	2

		(1)(2)(E)	
		Medical Imaging Equipment	3
		Clinical Engineering Practical Training	3
		Human Motion Analysis	
		Tissue Engineering	

Graduate Program of Department of Biomedical Engineering, Yuanpei University(Academic Year 2014)			
Year 1			
Required	Credits	Elective	Credits
The Special Topics of Biomedical Engineering	2	Medical Device Quality System	2
Seminar (1)(2)	2	Advanced Medical Equipment	2
Wellbeing Technology and Care	2	Human Motion Analysis	2
		Finite Element Method	2
		Hemodynamics	2
		Robotics	2
Year 2			
Required	Credits	Elective	Credits
Seminar (3)(4)	1	Wellbeing of Industry Practice Study	1
Thesis	6	Telerate System	2

Faculty and Staff

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Faculty and Staff

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Research

Current research fields include: bio-mechanics, bio-motion, bio-materials, bio-signals processing, bio-sensors, well-being technology and Tele-healthcare system.