SGU® | BIOMEDICAL ENGINEERING

SGU LST

Our Partner:

Fachhochschule Südwestfalen — University of Applied Sciences

Hochschule Albstadt-Sigmaringen — Albstadt-Sigmaringen University

IMI — UNIVERSITY CENTRE

Ernst-Abbe-Hochschule Jena — University of Applied Sciences

OAE — WOOSONG UNIVERSITY

HOKKAIDO UNIVERSITY

UMKC

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About Biomedical Engineering

Biomedical Engineering is a study that applies engineering principles to find the solution of problems in biology and medicine with the goal of improving health care. It combines basic sciences and engineering to develop, improve, and produce medical equipment or methodology. Some medical devices made by biomedical engineers are MRI, CT scanners, ECG, artificial organs, and many more. Regarding the emergence of the COVID-19 pandemic, the role of biomedical engineers in creating PCR test kits, vaccines, and research is so big.

Why Biomedical Engineering?

Biomedical engineering is an innovative field that merges engineering principles with biological sciences to address healthcare challenges, especially in the development and enhancement of medical devices. In this field, biomedical engineers specialize in integrating the Internet of Things (IoT) and Artificial Intelligence (AI) to create advanced solutions for patient diagnosis, treatment, and monitoring, ranging from sophisticated medical imaging equipment to wearable devices that track vital signs. Employing a project-based learning approach enables students to use their knowledge to pinpoint specific healthcare challenges in Indonesia, leading to innovative and practical solutions. They are encouraged to design devices aimed at early detection and disease prevention, thereby improving patient outcomes, and enhancing healthcare across Indonesia. As biomedical engineers with a focus on medical electronics, we can fulfil the need for sustainable medical devices in Indonesia.

Career Prospect

SGU's Food Technology Department graduates have plentiful career opportunities in every Biomedical engineer careers are based in modern hospitals as clinical engineers, in the medical devices industry and as suppliers, in the laboratory instrument business, and in research and development institutions.

International Academic Experience:

- Joint Degree Program with **Fachhochschule Südwestfalen** (approx. 6 months), get Sarjana Teknik (S.T.) and Bachelor of Engineering (B. Eng.) degrees.

- Single Degree program, get Sarjana Teknik (S.T.) degree.

- Get opportunities to study or do research in various partner universities such as **University Teknologi Malaysia** or **University of Basel**

- Internship program to ensure students receive global professional experience.

- Accelerate Success with the **SGU-University of Missouri - Kansas City** Fast Track Program

Alumni of the Biomedical Engineering Study Program have been accepted into top-tier firms, and the study program has established industry partnership, such as:

CURRICULUM

SEMESTER 1

- English 1
- Calculus and Linear Algebra 1
- Physics 1
- Physics 1 Laboratory
- Electrical Engineering 1
- Electrical Engineering 1 Laboratory
- Biology 1
- Biology Laboratory
- Chemistry 1
- Chemistry 1 Laboratory
- Introduction To Programming

Extracurricular Courses

- German Language and Culture 1
- Mandarin Language and Culture 1

SEMESTER 2

- English 2
- Ethics and Religious Philosophy
- Calculus & Linear Algebra 2
- Physics 2
- Physics 2 Laboratory
- Electrical Engineering 2
- Electrical Engineering 2 Laboratory
- Chemistry 2
- Chemistry 2 Laboratory
- Algorithm & Data Structure

Extracurricular Courses

- German Language and Culture 2
- Mandarin Language and Culture 2

SEMESTER 3

- Internship 1 (Indonesia)
- Cytology & Histology
- Applied Mathematics
- Electronics
- Electronics Laboratory
- Digital System
- Biomechanics (Statics)
- Introduction to Biomedical Engineering
- Biomedical Physics

SEMESTER 4

- English 3
- Pancasila & Civic
- Introduction to Engineering Statistics
- Sensor & Measurement System
- Biochemistry
- Biochemistry Laboratory
- Biomedical Devices Network
- Signals & Systems
- Biomaterials
- Biomedical Electromagnetics

Extracurricular Courses

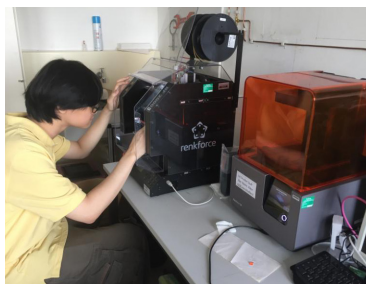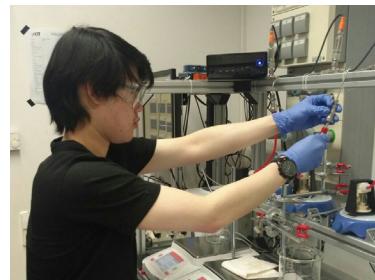- German Language and Culture 3
- Mandarin Language and Culture 3

SEMESTER 5

- English 4
- Indonesian Language
- Biomedical Instrumentation
- Biomedical Instrumentation Laboratory
- Microcontroller
- Automatic Control System
- Digital Signal Processing
- Anatomy & Physiology
- Anatomy & Physiology Laboratory
- Medical Imaging

Extracurricular Courses

- German Language and Culture 4
- Mandarin Language and Culture 4

SEMESTER 6

- Internship 2 (abroad)
- Elective 1 (abroad)
- Elective 2 (abroad)

SEMESTER 7

- English 5
- Entrepreneurship
- Research Metodology
- Bioinformatics (Computational Biology)
- Elective 3
- Elective 4
- Elective 5
- Elective 6

Elective Subjects

- Medical Information System
- Hospital Management
- Artificial Intelligence
- Mechanics of Implant and Artificial Organ
- Medical Biotechnology and Biomedical Diagnostics
- Enzyme Biochemistry
- Biodynamics and Gait Analysis
- Biomedical System Design
- Genomics, Transcriptomics, Proteomics and Metabolomics

SEMESTER 8

- Training & Competence Certification (PCA)
- Thesis
- Introduction to Clinical Engineering
- CPDP (Character Development)

INTERNSHIP EXPERIENCES

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