FTITB
FAKULTAS TEKNOLOGI INDUSTRI
INSTITUT TEKNOLOGI BANDUNG

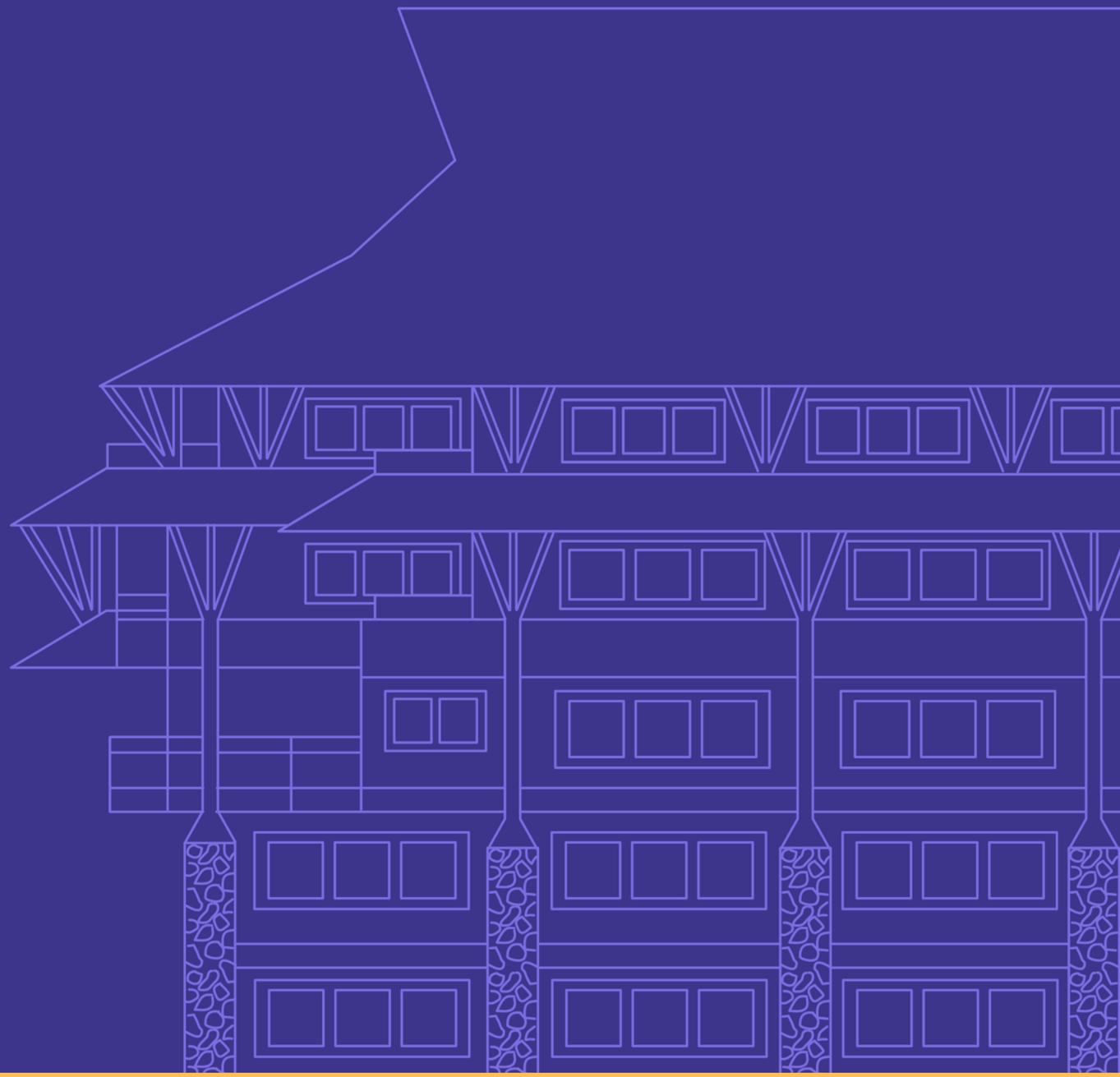
Your pathway to global engineering

Program Overview

Chemical Engineering
International Undergraduate Program

Faculty of Industrial Technology
Institut Teknologi Bandung

multidiscipline, adaptive, innovative



What is chemical engineering

Chemical Engineering is an engineering discipline which studies the design & operation of commercial-scale chemical processes in **safe, sustainable, & profitable manners**.

Curriculum

1st Year
Fundamental science

- Math
- Physics
- Chemistry
- Sustainability
- Computation
- Sport
- Engineering design
- Data literacy and AI
- Fundamental labs

2nd Year
Fundamental of engineering

- Thermodynamics
- Measurement & analysis
- Statistics
- Process computation
- Material & energy balances
- Reaction kinetics

3rd Year
Advanced engineering subjects

- Reaction engineering
- Unit operation
- Research methodology
- Design methodology

Sub-program

- Chemical technology
- Bioprocess technology

4th Year
Engineering Practices and Research Project

- Research
- Plant design
- Internship
- Comprehensive exam
- Bachelor thesis

Curriculum

No	Course name	Credit	No	Course name	Credit
1st semester			**2nd semester**		
1	MA1101 Mathematics 1	4	1	MA1201 Mathematics 2A	4
2	FI1101 Basic Physics 1	3	2	FI1201 Basic Physics 2A	3
3	KI1101 Basic Chemistry 1	3	3	KI1201 Basic Chemistry 2A	3
4	WI1101 Pancasila	2	4	WI2001 Introduction to Engineering & Design	3
5	WI1102 Computational Thinking	2	5	WI2005 Indonesian Language	2
6	WI1103 Introduction to Sustainable Principles	2	6	WI2003 Sport	1
7	WI1111 Fundamental Science Laboratory	2	7	WI2004 English	2
3rd semester			**4th semester**		
1	WI201X Religion	2	1	TK2201 Analytical & Physical Chemistry	3
2	WI2006 Civic Education	2	2	TK2202 Chemical Reaction Engineering I	3
3	WI2002 AI & Data Literacy	2	3	TK2203 Heat Transfer Operations	3
4	TK2101 Microbiology	2	4	TK2204 Statistics and Experimental Design	2
5	TK2102 Mass and Energy Balances	3	5	TK2205 Math. & Computation Processes	4
6	TK2103 Che. Eng. Thermodynamics	3	6	TK2001 Basic Laboratory of Measurement and Analysis	1
7	TK2104 Fluids Mechanics and Particles	3	7	TK2211 Engineering Materials & Process Equipment	3
8	TK2105 Organic Chemistry	3			

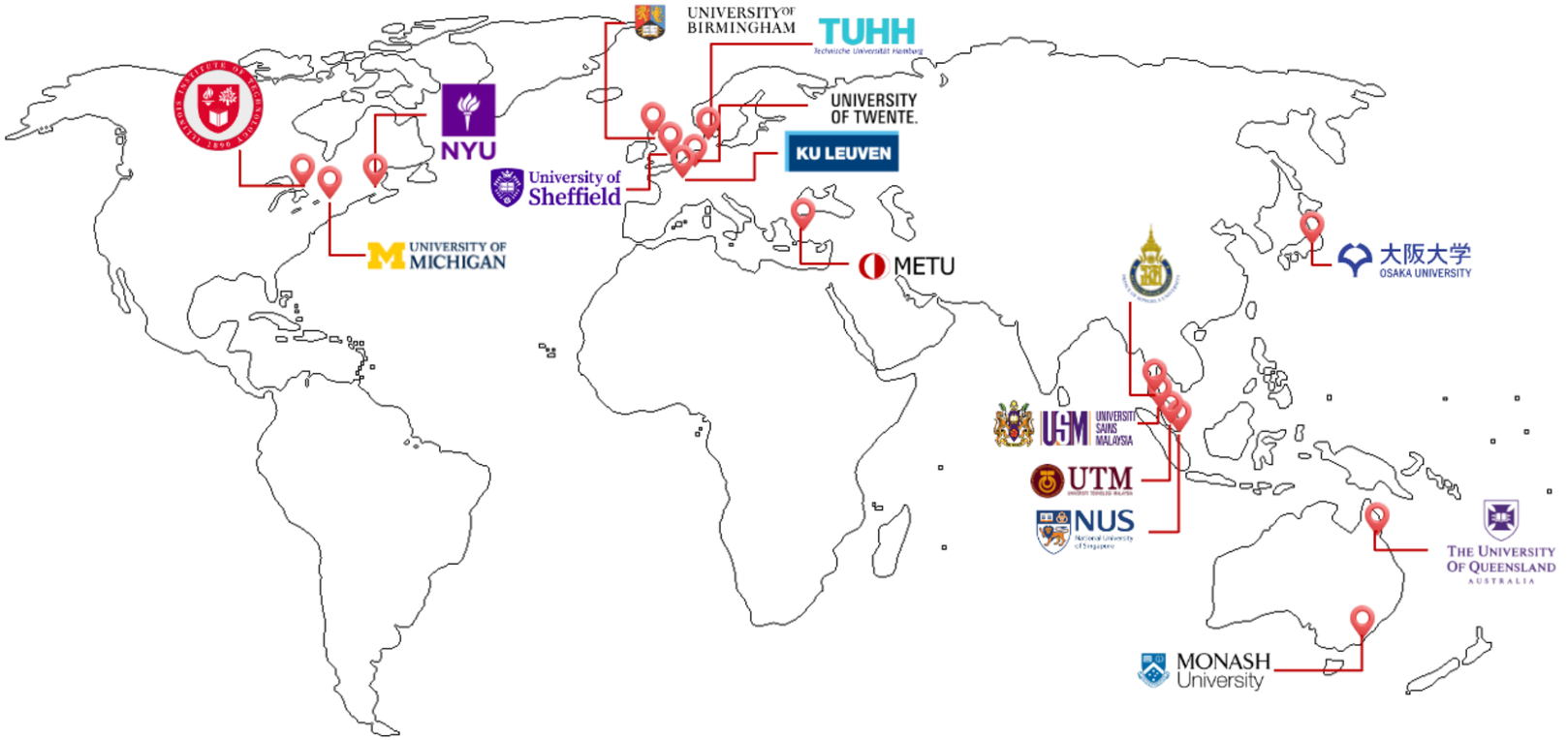
Curriculum

No	Course name	Credit	No	Course name	Credit
5th semester			**6th semester**		
1	TK3101 Separation Processes	3	1	TK3201 Chemical Product Design	2
2	TK3102 Utility Systems	3	2	TK3202 Process Control	3
3	TK3103 Introduction to Transport Phenomena	2	3	TK3203 Chemical Engineering Economics	2
4	TK3104 Industrial Waste Management and Circular Economy	2	4	WI2021 Project Management	2
5	TK3001 Chemical Engineering Laboratory I	2	5	TK3002 Chemical Engineering Laboratory II	2
6	TK3111 Chemical Reaction Engineering II	3	6	Elective Course ChemEng 1	3
7	TK3112 Capita Selecta Chemical Industry	3	7	Elective Course ChemEng 2	3
7th semester			**8th semester**		
1	TK4101 Chemical Engineering Professional Seminar	1			
2	TK4102 Process Safety	3			
3	TK4103 Process Design and Performance Evaluation	4	1	TK4093 Research Study II	5
4	TK4104 Interdisciplinary Engineering Project	2	2	TK4094 Chem. Eng. Plant Design	1
5	TK4091 Industrial Internship	2	3	TK4098 Comprehensive Assessment	3
6	TK4092 Research Study I	1	4	Elective Course External 1	3
7	Elective Course ChemEng 3	3	5	Elective Course External 2	3
8	Elective Course ChemEng 4	3			

Learning Outcome

1. Ability to identify, formulate, and solve complex engineering problems by applying knowledge of mathematics, science, and engineering principles.
2. Ability to design systems, components, or processes to meet specified needs while considering real-world constraints and the global, economic, environmental, and social impacts of engineering solutions.
3. Ability to communicate effectively with diverse stakeholders.
4. Ability to recognize professional and ethical responsibilities in engineering practice and to make informed decisions by considering the global, economic, environmental, and social impacts of engineering solutions.
5. Ability to function effectively in teams, in which members collaboratively provide leadership, create inclusive and collaborative environments, establish goals, plan tasks, and achieve objectives.
6. Ability to design and conduct experiments, analyze and interpret data, and apply engineering judgment to draw conclusions.
7. Ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Partnership program



2+2 Program with 2 bachelor degrees

- University of Queensland, Australia
- Monash University, Australia

3+1+1 Program with bachelor degree from ITB and master degree from partner university

- University of Queensland, Australia
- Monash University, Australia

Short Course Program

- University of Queensland, Australia
- Singapore Polytechnic, Singapore

Student Exchange Program

Various universities in and America, Europe, Asia

Estimation of education cost

No	Program	Estimated education costs* (ITB)	Estimated education costs per annum** (Outbound)
1	Bachelor double degree (2+2 program at The University of Queensland, Australia)	Rp 270.000.000	AUD 145,375 + Rp 23.920.000
2	Bachelor double degree (2+2 program at Monash University, Australia)	Rp 270.000.000	AUD 147,965 + Rp 23.920.000
3	Exchange program (1 semester at Michigan University, USA)	Rp 450.000.000	USD 13,018 + Rp 30.000.000
4	Exchange program (1 semester at Middle East Technical University, Turkey)	Rp 450.000.000	TRY 33,900 + Rp 30.000.000
5	Exchange program (1 semester at KU Lueven, Belgium)	Rp 450.000.000	EUR 4,100 + Rp 30.000.000
6	Exchange program (1 semester at National University of Singapore, Singapore)	Rp 450.000.000	SGD 4,450 + Rp 30.000.000

** Cost estimates may differ due to variations in the Institution Development Donation and living costs.*

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Career pathways

Industry domains	Typical roles
Engineering and Manufacturing	Process Engineer, Systems Engineer, Quality Engineer
Digital & Data	Data Analyst, Industrial Data Scientist
Energy & Sustainability	Renewable Energy Engineer, Sustainability Consultant
Research & Innovation	R&D Engineer, Research Assistant
Business & Consulting	Management Trainee, Technology Consultant

Why IUP (vs Regular Program)?

100% English taught

Structured international exposure

Project & research driven

Global-ready

“Studying abroad helped me grow academically and personally.”

My time at ITB shaped both my personal growth and career path. From my first year, I was supported by professors and friends who gave me the confidence to take on opportunities. Through the IUP double degree program, I spent two years at ITB and two years at the University of Queensland. Taking part in ITB student organisations and case competitions, such as ShARE Consulting Club, TEC ITB, AIChE, and AIESEC, helped me develop skills that led to an internship at PwC Australia and my current role as a Research Assistant at Australia’s Food and Beverage Accelerator (FaBA). FTI ITB encouraged me to stay curious, aim high, and surround myself with motivated people, lessons that continue to guide me today.

Shane Annabella Nusa Pratiwi, Research Assistant at FaBA (Australia), Chemical Engineering IUP Alumni (2021), FIT ITB