

Study Program: Chemical Engineering – *“Advancing High Technology in Manufacturing Industries”*

Description: Chemical engineers specialized in the design and operation of modern industrial manufacturing plants, to produce various useful and valuable materials, in the most economical way and the most environmental friendly ways. Contributions of Chemical Engineers for future development and field implementation of high tech industries are crucial so that it will continue to benefit and improve human prosperity.

Countless useful daily products are coming out from chemical manufacturing industries including oil and gas, biofuel, herbal and pharmaceuticals, cosmetics, plastics/polymers, textiles, healthcare and personal hygiene products, construction materials, pulp and paper, petrochemicals, food processing, fermentation products, specialty chemicals, microelectronics, electronic and advanced materials, nanomaterial, bioprocess and biotechnological products, battery and other materials for energy industries, environmental health and safety industries etc.

Students will be guided and equipped with the knowledge and skills relevant for future applications in manufacturing industries, in order to understand the concept of process and technology required in converting raw materials with low economic value, into final products that are needed by the society with substantially higher economic value for profitability. Needless to say, the process developed by chemical engineers must also be safe for the environment.

Bioprocess and Biotechnology

At Chemical Engineering IULI, students will also learn many fundamental aspects of bioprocess and biotechnology that will require the design and use of a bioreactor. These have multiple applications in the industries, including fermentation technology used in the food and dairy industries to produce for example yoghurt and cheese, brewery industries, biopharmaceuticals including antibiotics and vaccines, enzyme productions, biofuel such as bioethanol productions. Also, in the agricultural applications such as organic fertilizers and extraction of growth hormones.

Natural Products for Herbal/Pharmaceuticals and Cosmetics

Our programs also have some focus on the production of natural products to be used in herbal medicine, as well as cosmetics industries. Basic knowledge in extraction and enrichment of natural products are also given. This will be combined with latest technological development in the extraction and separation technology as well as applications of nanotechnology. Indonesia with its wealthy biodiversity provides countless natural resources that needs to be explored by next generation of scientists and engineers. Chemical engineers also play important roles in the development of these naturally derived products.

IULI 3+1 International Program in Germany

Students at Chemical Engineering Program also have the opportunity to gain experience of studying, doing research, and working in an internship program in Germany in our **3+1 International program**.

In the program, students will study for 3 years in Indonesia at IULI, and will spend the last 1 year in Germany. Our partner, **TU Ilmenau (*Technische Universität Ilmenau*)**, offer a unique and challenging experience that will open up the perspectives of our students to start their international career after graduation, or to continue with Masters and Doctorate degrees.

In this program, students will be given the chance to experience classroom study in Germany, while also doing fundamental cutting edge research supervised by experienced research team in our partner university. Finally, the internship program will give students new and exciting experience of working in Germany. This can be working in a company/industry, or in a university research laboratory. The multicultural setting faced by the students will give our graduates confidence to work in international companies.

International Exchange Program and Double Degree (B.Sc.) Program in Germany

During this **3+1 International Program**, our students are given the options to take the status of exchange students, or to take the Double Degree (DD) Program. In the DD program, students are required to take in total of 60 ECTS¹ (European Credit Transfer System) during the 1 year stay, which will allow the student to get a Bachelor Double Degree from the TU Ilmenau. The required ECTS credits are fulfilled by completing courses, research work for thesis, and by the internship program.

Field of Studies: Chemistry • Physical Chemistry • Mass and Energy balance • Thermodynamics • Fluid and Particle Mechanics • Heat and Mass Transfer • Chemical Reactor Engineering Design • Chemical Engineering Laboratories • Separation Process • Distillation • Extraction and purification • Membrane Technology • Unit Process Design • Health and Occupational Safety • Microbiology • Bioreactor, Bioprocess and Biotechnology • Fermentation Technology • Nanotechnology • Innovations and new Products development • Herbal Medicine, Nutraceuticals and Cosmetics • Engineering Economics • Chemical Engineering Plant Design

¹ 1 SKS (Indonesia) = 1.4 ECTS (European)

General Information:

Legal Base / Accreditation:	SK DIKTI No. 425/E/O/2014
Duration of Study:	4 years (8 semester)
Academic Year:	2 semesters (even + odd) Even Semester: February - July Odd Semester: August - January
Academic weeks/semester:	16 (14 academics + 2 exams)
SKS ² per semester:	Max. 24
SKS per study:	144-160
Duration of a lecture:	50 minutes
Number of students per subject:	16-32
Language of Instruction:	English
Academic Degree:	Indonesia: Sarjana Teknik – S.T. (S1) International: Bachelor of Science (B.Sc)
Tuition Fee/semester:	Rp. 29.900.000
Online Application:	https://pmb.iuli.ac.id

² SKS: 1 SKS (preparation, lecture, exercises)

Study Program Description



Academic Year 2022/2023 – Bachelor Degree Programs

Structure of a study:

1	2	3	4	5	6	7	8
Semester 1-6: Academic Education (see curriculum), OFSE (Oral Final Study Examination)							
Semester 7: Research Semester (abroad for Double Degree)							
Semester 8: Thesis Defense, Graduation							

Score System:

Grade Letter	Grade Wording	IULI	Indonesian Grade	Germany Grade	Grade Descriptions	Student Representation
A	Excellent	86-100	4	1	Outstanding Performance	10%
B	Good	71-85	3.0-3.9	2	Performance is considerably higher than the average requirements	25%
C	Satisfactory	56-70	2.0-2.9	3	Performance meets the average requirements	30%
D	Poor	46-55	1.0-1.9	4	Performance is poor and likely to lead to failure	25%
F	Fail	<45	0	5	Performance does not meet the minimum criteria. Considerable further work is required	10%

Contacts:



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DAAD



Federal Ministry of Education and Research

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Jl. BSD Grand Boulevard
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Island of Java

Study Program Description



Academic Year 2022/2023 – Bachelor Degree Programs

Curriculum: in SKS

University Compulsory Subjects		Semester									
			1	2	3	4	5	6	7	8	Total
1	English	ENGL	2	2	2	2	1	1			10
2	Computer Network & IT Security	CNIS	2								2
3	Applied Statistics	MATH		2							2
4	Research Methodology	RESM		2							2
5	Environmental Sciences	ENVI			2						2
6	Civics	CIVI				2					2
7	Ethics and Religious Philosophy	ETRP					2				2
8	Innovation & Product Development	PROD					2				2
9	E-Commerce	ECOM						2			2
10	Indonesian Language & Culture	IDLC						2			2
11	Pancasila	PANC						2			2
12	Oral Final Study Examination (OFSE)	OFSE						0			0
13	Research Semester	RESS							6		6
14	Elective : Internship / Project	INSP								3	3
15	Thesis / Thesis Defence	THES								6	6
Total			4	6	4	4	5	7	6	9	45

Life Science Faculty Compulsory		Semester									
			1	2	3	4	5	6	7	8	Σ
1	Introduction to Life Sciences	INLS	1								1
2	Physics & Laboratory 1	PHY1	3								3
3	Physics & Laboratory 2	PHY2		3							3
4	Engineering Mathematics 1	MAT1	3								3
5	Engineering Mathematics 2	MAT2		3							3
6	Applied Mathematics	MAT3			3						3
7	Numerical Methods	NUME				2					2
8	Chemistry	CHEM	2								2
9	Chemistry Laboratory	CHEL		1							1
10	Organic Chemistry	ORCH		3							3
11	Organic Chemistry Laboratory	ORCL			1						1
12	Electrical Engineering & Laboratory 1	EEL1	3								3
13	Electrical Engineering & Laboratory 2	EEL2		3							3
14	Material Science	MATS	2								2
15	Biology	BIOL	3								3
16	Biochemistry	BICH			3						3

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17	Algorithm, Programming 1	PRO1	3								3
18	Algorithm, Programming 2	PRO2		3							3
19	Engineering Economy	EECO					2				2
20	Metrology and Quality Control	MEQC			2						2
	Total		20	16	9	2	2	0	0	0	49

CHE - Department Compulsory			Semester								Σ
			1	2	3	4	5	6	7	8	
1	Fluid and Particle Mechanics	TFSC			3						3
2	Mass and Energy Balance	MEBA		2							2
3	Microbiology	MIBI			3						3
4	Microbiology Laboratory	MIBL				1					1
5	Physical Chemistry	PHCH			3						3
6	Analytical Chemistry	ANCH			2						2
7	Physical and Analytical Chemistry Laboratory	PACL				1					1
8	Heat & Mass Transfer Operations	HMTO				3					3
9	Chemical Engineering Thermodynamics	CHTH				4					4
10	Transport Phenomena	TRPH						2			2
11	Process Control	PRCO					3				3
12	Chemical Industrial Technology	CHIT				3					3
13	Plant Health and Safety	PLHS						2			2
14	Chemical Engineering Operations Laboratory 1	COL1					1				1
15	Separation Process	SEPR						3			3
16	Chemical Engineering Plant Design	CEPD						4			4
17	Chemical Engineering Operation Laboratory 2	COL2						1			1
18	Chemical Reaction Engineering Design	CHRE					4				4
19	Electives	ELEC				3	6	3			12
	Department		0	2	11	15	14	15	0	0	57
	Faculty		20	16	9	2	2	0	0	0	49
	University		4	6	4	4	5	7	6	9	45
	Total		24	24	24	21	21	22	6	9	151

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Elective Courses (*)		
	Subjects	SKS
1	Introduction to Biotechnology	3
2	Introduction to nanotechnology	2
3	Chemistry of Complex Compounds	2
4	Industrial Waste Water Treatment	2
5	Advances in Engineering Research	2
6	Quality Assurance and Management	2
7	Anatomy and Physiology	3
8	Antibiotics	2
9	Bioprocess Technology	2
10	Instrumental Analysis	2
11	Cellular Biology	2
12	Indonesian Herbal Medicine	2
13	Nutraceuticals and Cosmetics	2

*) Elective Subjects offered may varied each academic year

Other Extracurricular Courses

German Languages (B1/B2 level by semester 6)