

## Courses

This table aims to give detailed information related to the subjects the students need to take every semester

### Semester 1

No	Subject	Credit	Status (Compulsory/Elective)	Prerequisite
1	Islamic Religion	2	Compulsory	-
2	State Philosophy	2	Compulsory	-
3	English	2	Compulsory	-
4	Fundamentals of Chemistry	3	Compulsory	-
5	Organic Chemistry	3	Compulsory	-
6	Calculus	3	Compulsory	-
7	Fundamental of Physics	4	Compulsory	-

### Semester 2

No	Subject	Credit	Status (Compulsory/Elective)	Prerequisite
1	Islam for Scholar	3	Compulsory	-
2	Analytical Chemistry	3	Compulsory	-
3	Physical Chemistry	3	Compulsory	-
4	Linear Algebra	3	Compulsory	-
5	Introduction to Chemical Engineering	2	Compulsory	-
6	Mass and Energy Balances	4	Compulsory	Calculus, Fundamental of Chemistry
7	Fundamental of Chemistry and Organic Chemistry Lab Work	1	Compulsory	-

**Semester 3**

No	Subject	Credit	Status (Compulsory/Elective)	Prerequisite
1	Islam Rahmatan Lil Alamin	3	Compulsory	-
2	Citizenship Education	2	Compulsory	-
3	Chemical Engineering Thermodynamics	4	Compulsory	Mass and Energy Balances
4	Chemical Engineering Mathematics	3	Compulsory	Calculus, Linear Algebra
5	Fluid Mechanics and Particles	4	Compulsory	-
6	Chemical Reaction Engineering 1	3	Compulsory	Fundamental of Chemistry
7	Analytical Chemistry and Physical Chemistry Lab Work	1	Compulsory	-

**Semester 4**

No	Subject	Credit	Status (Compulsory/Elective)	Prerequisite
1	Sharia Entrepreneurship	2	Compulsory	-
2	Chemical Industrial Processes	3	Compulsory	-
3	Materials and Corrosion	2	Compulsory	-
4	Chemical Reaction Engineering 2	3	Compulsory	Chemical Reaction Engineering 1
5	Mass and Heat Transfer Operation	4	Compulsory	Mass and Energy Balances
6	Mathematical Modeling and Numerical Computation	4	Compulsory	Mass and Energy Balances, Chemical Engineering Mathematics
7	Unit Operation Lab Work 1	1	Compulsory	Fluid Mechanics and Particles

**Semester 5**

No	Subject	Credit	Status (Compulsory/Elective)	Prerequisite
1	Scientific Communication Skill	2	Compulsory	-
2	Engineering Economics	2	Compulsory	-
3	Statistics for Engineering	2	Compulsory	
4	Utilities	3	Compulsory	-
5	Process Engineering Drawing	2	Compulsory	-
6	Transport Phenomena	3	Compulsory	Chemical Engineering Mathematics
7	Process Equipment Design	3	Compulsory	Mass and Heat Transfer Operation, Materials and Corrosion
8	Unit Operation Lab Work 2	1	Compulsory	Unit Operation Lab Work 1, Mass and Heat Transfer Operation
9	Research Methodology	2	Compulsory	Unit Operation Lab Work 1

**Semester 6**

No	Subject	Credit	Status (Compulsory/Elective)	Prerequisite
1	Community Services	2	Compulsory	Min. 100 credits with a GPA $\geq$ 2.25 and passed the S3D Program
2	Industrial Project Management	2	Compulsory	-
3	Multi-Stage Separation	4	Compulsory	Mass and Heat Transfer Operation
4	Process Control	3	Compulsory	Mathematical Modeling and Numerical Computation
5	Bioprocess Technology	3	Compulsory	-
6	Research	3	Compulsory	Research Methodology
7	Elective Course 1	3	Elective	80 credits

## Semester 7

No	Subject	Credit	Status (Compulsory/Elective)	Prerequisite
1	Waste Management and Industrial Safety	4	Compulsory	-
2	Process Simulation	3	Compulsory	Multi-Stage Operation, Chemical Reaction Engineering 2
3	Chemical Plant Design	4	Compulsory	Process Control, Multi- Stage Operation, Process Equipment Design, Utilities
4	Internship	2	Compulsory	Min. 100 credits with a GPA $\geq$ 2.25 and passed the S3D program
5	Elective Course 2	3	Elective	-
6	Elective Course 3	3	Elective	-

## Semester 8

No	Subject	Credit	Status (Compulsory/Elective)	Prerequisite
1	Chemical Plant Design Project	4	Compulsory	120 credits with a GPA $\geq$ 2.25 and can be taken simultaneously with the Chemical Plant Design course (STK751)
2	Comprehensive Exam	1	Compulsory	120 credits
3	Elective Course 4	3	Elective	-

## Scientific Interest Compulsory Courses

### Semester 4

No	Subject	Credit	Prerequisite
1	Chemical Industrial Processes	3	-
2	Materials and Corrosion	2	-
3	Chemical Reaction Engineering 2	3	Chemical Reaction Engineering 1
4	Mass and Heat Transfer Operation	4	Mass and Energy Balances

5	Mathematical Modeling and Numerical Computation	4	Mass and Energy Balances, Chemical Engineering Mathematics
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### Semester 5

No	Subject	Credit	Prerequisite
1	Engineering Economics	2	-
2	Statistics for Engineering	2	
3	Utilities	3	-
4	Process Engineering Drawing	2	-
5	Transport Phenomena	3	Chemical Engineering Mathematics
6	Process Equipment Design	3	Mass and Heat Transfer Operation, Materials and Corrosion
7	Research Methodology	2	Unit Operation Lab Work 1

### Semester 6

No	Subject	Credit	Prerequisite
1	Industrial Project Management	2	-
2	Multi-Stage Separation	4	Mass and Heat Transfer Operation
3	Process Control	3	Mathematical Modeling and Numerical Computation
4	Bioprocess Technology	3	-
5	Research	3	Research Methodology

### Elective Courses

#### Odd Semester (3, 5, 7, and so on)

No	Subject	Credit	Prerequisite
1	Food Technology	3	-
2	Functional Food Technology	3	-
3	Food Nanotechnology	3	-
4	Drying Technology	3	-

5	Active and Smart Packaging	3	-
6	Microbiology	3	-
7	Controlled Drug Release System	3	-
8	Biomass Energy Technology	3	-
9	Fuel Cell Technology	3	-
10	Energy Storage Technology and Management	3	-
11	Petroleum Technology	3	-
12	Energy from Waste	3	-
13	Clean and Renewable Energy	3	-
14	Green Chemistry for Sustainable Development	3	-
15	Biomaterials Technology	3	-
16	Smart Material Technology	3	-
17	Nanomaterials Technology	3	-
18	Polymer Technology	3	-
19	Ceramic Technology	3	-
20	Advanced Modeling and Simulation	3	-
21	Petroleum Processing Technology Simulation	3	-
22	Gas Purification Technology and Simulation	3	-
23	System Optimization	3	-
24	Advanced Adsorption	3	-
25	Industrial Internet of Things	3	-
26	Startup Business	3	-

**Even Semester (4, 6, 8, and so on)**

No	Subject	Credit	Prerequisite
1	Food Technology	3	-
2	Functional Food Technology	3	-
3	Food Nanotechnology	3	-
4	Drying Technology	3	-
5	Active and Smart Packaging	3	-
6	Microbiology	3	-
7	Controlled Drug Release System	3	-
8	Biomass Energy Technology	3	-
9	Fuel Cell Technology	3	-
10	Energy Storage Technology and Management	3	-
11	Petroleum Technology	3	-
12	Energy from Waste	3	-
13	Clean and Renewable Energy	3	-
14	Green Chemistry for Sustainable Development	3	-
15	Biomaterials Technology	3	-
16	Smart Material Technology	3	-
17	Nanomaterials Technology	3	-
18	Polymer Technology	3	-
19	Ceramic Technology	3	-
20	Advanced Modeling and Simulation	3	-
21	Petroleum Processing Technology Simulation	3	-
22	Gas Purification Technology and Simulation	3	-
23	System Optimization	3	-
24	Advanced Adsorption	3	-

<b>25</b>	Industrial Internet of Things	3	-
<b>26</b>	Startup Business	3	-

**Table of List of Compulsory Student Activities**

No	Activity	Credit (skp)
1	Intensive course on Islamic Basic Values	20
2	Self-development based on Koran	20
3	Self-development Training	5
4	Leadership and Da'wah Training	5