



# CURRICULUM

## PHARMACEUTICAL CHEMICAL ENGINEERING

Academic Year 2020/2021

SEMESTER 1	SKS	ECTS
English 1	2	3
Calculus and Linear Algebra 1	3	4
Physics 1	2	3
Physics 1 Laboratory	1	2
Chemistry 1	3	4
Chemistry 1 Laboratory	1	2
Introduction to Information Technology	2	3
Introduction to Electrical Engineering	2	3
Biology	2	3
Indonesian Language	2	2
<b>Total Mandatory</b>	<b>20</b>	<b>29</b>
Extracurricular Courses		
German Language and Culture 1	2	0
<b>TOTAL</b>	<b>22</b>	<b>29</b>

SEMESTER 2	SKS	ECTS
English 2	2	3
Calculus and Linear Algebra 2	3	4
Physics 2	2	3
Physics 2 Laboratory	1	2
Chemistry 2	3	4
Chemistry 2 Laboratory	1	2
Engineering Statistics	2	3
Introduction to Chemical Engineering	2	3
Microbiology	2	3
Entrepreneurship	2	3
Ethics and Religious Philosophy	2	3
<b>Total Mandatory</b>	<b>22</b>	<b>33</b>
Extracurricular Courses		
German Language and Culture 2	2	0
<b>TOTAL</b>	<b>24</b>	<b>33</b>

SEMESTER 3	SKS	ECTS
Internship 1 (Indonesia)	2	10
Good Manufacturing Practice (GMP) and Pharmaceutical Code	2	3
Material and Energy Balance	3	4
Analytical Instrumentation	2	3
Pharmaceutical Chemistry	3	4
Pharmaceutical Chemistry Laboratory	1	2
Applied Mathematics	2	3
Thermodynamics	3	4
Thermodynamics Laboratory	1	2
Fluid Mechanics	2	3
Engineering Economics and Analysis	2	3
<b>Total Mandatory</b>	<b>23</b>	<b>33</b>
<b>TOTAL</b>	<b>23</b>	<b>33</b>

SEMESTER 4	SKS	ECTS
English 3	2	3
Pancasila and Civic	3	4
Unit Operations	2	3
Heat Transfer	2	3
Transport Phenomena	2	3
Physical Chemistry	2	4
Chemical Reactions and Kinetics	2	4
Numerical Methods	2	3
Separation Technology	3	4
<b>Total Mandatory</b>	<b>20</b>	<b>31</b>
Extracurricular Courses		
German Language and Culture 3	4	0
<b>TOTAL</b>	<b>24</b>	<b>31</b>

SEMESTER 5			SEMESTER 6		
	SKS	ECTS		SKS	ECTS
English 4	2	3	Internship 2 (abroad)	6	28
Reactor Engineering	3	5	Elective Subject 2	2	3
Pharmaceutical Manufacturing Technology	2	3	Elective Subject 3	2	3
Pharmaceutical Manufacturing Technology Laboratory	1	2			
Phytochemistry	2	3			
Herbal and Traditional Industry	2	3			
Pharmaceutical Material & Formulation	2	3			
Process Equipment Design	2	5			
Introduction to Chemical Process Industries	2	4			
Elective Subject 1	2	3			
<b>Total Mandatory</b>	<b>20</b>	<b>34</b>	<b>Total Mandatory</b>	<b>10</b>	<b>34</b>
Elective Subject 1					
Bioprocess Engineering	2	5			
Production Planning Inventory Control	2	2			
Materials Science	2	3			
Extracurricular Courses					
Supply Chain Management	2	2			
<b>TOTAL</b>	<b>28</b>	<b>46</b>	<b>TOTAL</b>	<b>10</b>	<b>34</b>

SEMESTER 7			SEMESTER 8		
	SKS	ECTS		SKS	ECTS
English 5	2	3	Professional Competence Assessment (PCA)	3	4
Plant Safety Operations	2	3	Thesis	6	15
Research Methodology	2	3	Character and Professional Development Program (CPDP)	2	
Plant Design	4	6			
Process Control	2	3			
Critical Utility & Waste treatment	2	4			
Pharmaceutical Product Development	2	5			
Elective Subject 4	2	4			
<b>Total Mandatory</b>	<b>18</b>	<b>31</b>	<b>Total Mandatory</b>	<b>11</b>	<b>19</b>
Elective Subjects					
Pharmaceutical Industry Facility	2	4			
Pharmaceutical Quality Control System	2	4			
<b>Total</b>	<b>22</b>	<b>39</b>	<b>TOTAL</b>	<b>11</b>	<b>19</b>

Total Offered SKS (Sistem Kredit Semester) : 164 SKS    SKS : Satuan Kredit Semester  
 Total Mandatory : 144 SKS    ECTS : European Credit Transfer System  
 Total ECTS : 264 ECTS

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