

## Elective Courses

SETB 4213	Food Process Engineering
SETB 4223	Environmental Biotechnology for Engineers
SETB 4233	Bioproduct Development and Processing
SETB 4243	Biopharmaceutical Engineering
SETB 4253	Green Energy Engineering
SETB 4263	Tissue Culture and Cell Engineering

## GRADUATION CHECKLIST

To graduate, students must pass all the stated courses in this checklist. It is the responsibility of the students to ensure that all courses are taken and passed. Students who do not complete any of the courses are not allowed to graduate.

NO.	CODE	COURSE	CREDIT EARNED (JKD)	CREDIT COUNTED (JKK)	TICK (✓) IF PASSED
<b>CHEMICAL-BIOPROCESS ENGINEERING COURSES</b>					
1	SETB 1011	Industrial Career & Seminar	1	1	
2	SETB 1021	Engineering Drawing	1	1	
3	SETB 1023	Introduction to Chemical & Bioprocess Engineering	3	3	
4	SETB 1123	Statics & Biomaterial	3	3	
5	SETB 2033	Thermodynamics	3	3	
6	SETB 1113	Mass Balance	3	3	
7	SETB 1133	Microbiology for Engineers	3	3	
8	SETB 2113	Introduction to Programming	3	3	
9	SETB 2123	Energy Balance	3	3	
10	SETB 2043	Fluid Mechanics	3	3	
11	SETB 2721	Fluid Mechanics Laboratory	1	1	
12	SETB 1721	Bioprocess Engineering Laboratory: Upstream	1	1	
13	SETB 2133	Chemical Engineering Computation	3	3	
14	SETB 2213	Chemical Engineering Thermodynamics	3	3	
15	SETB 2313	Transport Processes	3	3	
16	SETB 2711	Thermodynamics and Material Eng. Laboratory	1	1	
17	SETB 3213	Biochemistry	3	3	

18	SETB 3123	Molecular Biology & Genetic Engineering	3	3	
19	SETB 3223	Chemical Reaction Engineering	3	3	
20	SETB 3323	Separation Processes	3	3	
21	SETB 3413	Environmental Eng. and Sustainability	3	3	
22	SETB 3721	Pollution Control and Reaction Laboratory	1	1	
23	SETB 3113	Bioseparation Technology	3	3	
24	SETB 3133	Bioreactor Design & Analysis	3	3	
25	SETB 3812	Undergraduate Project I	2	2	
26	SETB 3731	Separation Processes Laboratory	1	1	
27	SETB 3143	Process Control	3	3	
28	SETB 3741	Bioprocess Engineering Laboratory: Downstream	1	1	
29	SETB 3173	Engineering Economics and Project Management	3	3	
30	SETB 3915	Industrial Training (YEAR 3/SHORT SEM.) for 12 weeks/3 months	5	HL	
31	SETB 4741	Process Control Laboratory	1	1	
32	SETB 4814	Undergraduate Project II	4	4	
33	SETB 4153	Plant Design	3	3	
34	SETB 4163	Safety and Health in Chemical & BioIndustry	3	3	
35	SETB 4824	Plant Design Project	4	4	
36	SETB 4133	Quality Management in BioManufacturing	3	3	
37	SET* ***3	Elective 1	3	3	
38	SET* ***3	Elective 2	3	3	
		<b>TOTAL CREDIT OF CHEMICAL-BIOPROCESS ENGINEERING COURSES (a)</b>	<b>99</b>	<b>94</b>	
<b>APPLIED SCIENCE/ MATHEMATICS COURSES (Faculty of Science)</b>					
1	SSCE 1693	Engineering Mathematics I	3	3	
2	SSCE 1993	Engineering Mathematics II	3	3	
3	SSCE 1793	Differential Equations	3	3	
4	SEEU 2003	Electrical Technology	3	3	
5	SSCK 1603	Organic Chemistry: Functional Group	3	3	
6	SSCK 1831	Organic Chemistry Practical	1	1	
7	SSCK 1203	Analytical Chemistry for Engineering	3	3	

8	SSCK 1891	Analytical Chemistry Practical	1	1	
		<b>TOTAL CREDIT OF APPLIED SCIENCE/ MATHEMATICS COURSES (b)</b>	<b>20</b>	<b>20</b>	
<b>UNIVERSITY GENERAL COURSES</b>					
<b>Kluster 1: Penghayatan Falsafah, Nilai &amp; Sejarah (Faculty of Social Sciences and Humanities)</b>					
1	UHMS 1182	Appreciation of Ethics and Civilizations (for Local Students)	2	2	
	UHMS 1022 OR UHMS 1182	Philosophy and Current Issues (for International Students) OR Appreciation of Ethics and Civilizations (for International Students)			
2	UHS 1022	Philosophy and Current Issues (for Local Students)	2	2	
	UHLM 1012	Malay Language Communication 2 (for International Students)			
<b>Kluster 2: Kemahiran Insaniah (Soft Skills)</b>					
1	UHMT 1012	Graduate Success Attributes	2	2	
2	U*** 2**2	General Elective (Soft skill)	2	2	
<b>Kluster 3: Perluasan Ilmu</b>					
1	UHIT 2302	The Thought of Science and Technology	2	2	
<b>Kluster 4: Kurikulum Pembelajaran Servis</b>					
1	UKQF 2**2	Co-Curriculum & Service Learning	2	2	
2	UKQT 3001	Extracurricular Experiential Learning (ExCEL)	1	1	
<b>Kluster 5: Kemahiran Bahasa (Language Skill) (Language Academy, Faculty of Social Sciences and Humanities)</b>					
1	UHLB 1112	English Communication Skills	2	2	
2	UHLB 2122	Academic Communication Skills	2	2	
3	UHLB 3132	Professional Communication Skills	2	2	
4	UHL* 1112	Foreign Language	2	2	
<b>Kluster 6: Kemahiran Keusahawanan</b>					
1	UBSS 1032	Introduction to Entrepreneurship	2	2	
		<b>TOTAL CREDIT of UNIVERSITY GENERAL COURSES (c)</b>	<b>23</b>	<b>23</b>	

		<b>TOTAL CREDIT TO GRADUATE (a + b + c)</b>	<b>142</b>	<b>137</b>	
<b>OTHER COMPULSORY COURSES</b>					
<b>Professional Skills Certificate (PSC) (UTMSPACE/ School)</b>					
1	GLL 1001	How to Get Your Self Employed			
2	GLL 1029	ISO 9001:2008 Quality Management System Requirement			
3	GLL 1040	Occupational Safety, Health and Environment			
4	GLL 1041	How to Manage Your Personal Finance			
<b>Test of English Communication Skill (TECS) (Language Academy, Faculty of Social Sciences and Humanities)</b>					
1	TECS 1001	Oral Interaction			
2	TECS 1002	Writing			

## COURSE SYNOPSIS

### CORE COURSES

#### SETB 1011 Industrial Career & Seminar

This course introduces students to the chemical/bioprocess engineering working environment through seminars from respective personnel and industrial visit to various chemical plants in Malaysia. Assignments and group-based project will be given.

#### SETB 1021 Engineering Drawing

Computer Aided Drawing Computer Aided Command, , Geometry, Orthographic Drawing, Isometric Drawing, Sectional Drawing, Flowchart Drawing.

#### SETB 1023 Introduction to Chemical & Bioprocess Engineering

Overview of engineering, the profession and its requirements in the Malaysian scenario. Communication (oral and written) and teamwork skills. Mind mapping, learning styles and time management. Basic calculations and unit conversions. Create an engineering graph and solving iterative problems using computer. Ethics. Seminar. Plant visits. This course employs Cooperative Learning and grooms students with skills for Problem-based Learning.

#### SETB 1123 Statics & Biomaterial

This course is designed to introduce students to the basic principles and concepts in mechanics. The content will be divided to two parts which are i) statics and ii) strength of material/biomaterial. The first part will deal with the resultant and resolution of force(s) acting on a particle, the equilibrium of a particle, the effect of force(s) on a rigid bodies, how to replace a force system with equivalent system and the equilibrium of rigid bodies. At the end of the course, students should be able to demonstrate and apply the knowledge by solving various problems in Statics. The second part will focus on the types of material/biomaterial (introduction, overview) and will follow with few elements that are important in understanding