Branch Campus
Malaysian Institute of Chemical & Bioengineering Technology

Programme Handbook
January 2022

Disclaimer:

The Programme Handbook Bachelor January 2022 Intake
is meant for the students for Bachelor January 2022 Intake.

Universiti Kuala Lumpur Branch Campus
Malaysian Institute of Chemical & Bioengineering Technology
(UniKL MICET)
reserves the right to change the content without prior notice.

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Academic Top Management Team UniKL MICET

	Associate Professor Ts. Dr Ruzainah binti Ali@Jaafar Dean of UniKL MICET Email: ruzainah@unikl.edu.my Phone: 06-551 2146
	Dr Raja Nazrul Hakim bin Raja Nazri Deputy Dean Academic and Technology Email: rajanazrul@unikl.edu.my Phone: 06-551 2077
	Azu Farhana binti Anuar Deputy Dean Student Development & Campus Lifestyle Email: azufarhana@unikl.edu.my Phone: 06-551 2136
	Ts Dr Muhamad Yusuf bin Hasan Deputy Dean IIIP Email: muhamadyusuf@unikl.edu.my Phone: 06-551 2077

Academic Staff Member of UniKL MICET

TECHNICAL FOUNDATION SECTION

SL: STUDY LEAVE

NO.	NAME	HIGHEST QUALIFICATION	DESIGNATION
1.	MS. ZAIDA RAHAYU BINTI YET (Head of Section)	MASTER OF SCIENCE	SENIOR LECTURER
2.	MR. ABDUL HAKIM BIN HJ ABU BAKAR	MASTER ELECTRICAL ENGINEERING	SENIOR LECTURER
3.	MS. ASIMI ANA BINTI AHMAD	MASTER OF ENGINEERING (CHEMICAL)	LECTURER
4.	MS. AZLINA DIN	MASTER OF COMPUTER SCIENCE	LECTURER
5.	HANIZA BINTI KAHAR (Ts.)	MASTER OF SCIENCE (ANALYTICAL CHEMISTRY & INSTRUMENT)	LECTURER
6.	MS. IZUME AYUNA BINTI MOHAMED KHAMIL	MASTER OF INFORMATION TECHNOLOGY	LECTURER
7.	MR. MOHD NASIR MAHMUD	MASTER OF MATHEMATICS	LECTURER
9.	MR. MOHD NIZAM BIN ZAHARI	MASTER OF ENGINEERING TECHNOLOGY (GREEN & ENERGY EFFICIENT BUILDINGS	LECTURER
10.	NAZATULSHIMA BINTI HASSAN (Dr)	PhD (BIOSTATISTIC)	SENIOR LECTURER
11.	MS. NURUL NABIHAH BINTI RAHMAN	MASTER OF ENGINEERING MATHEMATICS	LECTURER
12.	SITI HARTINI BINTI HAMDAN (Ts. Dr)	PhD (MECHANICAL ENGINEERING) TRIBOLOGY	SENIOR LECTURER
13.	MS. SITI NUR ELMI BINTI ABDUL AZIZ	MASTER OF SCIENCE	LECTURER
14.	MS. TEO SIEW HWAY	MASTER OF INFORMATION TECHNOLOGY	LECTURER
15.	MS. YUSHAZAZIAH BINTI MOHD YUNOS	MASTER OF SCIENCE (MECHANICAL ENGINEERING)	LECTURER
16.	MS. NORHAYATI BINTI MOHD IDRUS	MASTER OF SCIENCE	LECTURER

PROCESS ENGINEERING TECHNOLOGY SECTION

SL: STUDY LEAVE

NO.	NAME	HIGHEST QUALIFICATION	DESIGNATION
1.	MOHD. RAZEALY BIN ANUAR (Dr.) (Head of Section)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
2.	AHMAD AZAHARI BIN HAMZAH (Dr)	PhD (ELECTRICAL ENGINEERING)	SENIOR LECTURER
3.	MS. AIZA SYUHANIZ BINTI SALLEH	MASTER OF ENGINEERING	LECTURER
4.	ALIFF RADZUAN BIN MOHAMAD RADZI (Ts. Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
5.	AMIN SAFWAN BIN ALIKASTURI (Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
6.	MR. AZRIN BIN ABDUL RAHMAN	MASTER OF SCIENCE (PROCESS PLANT MANAGEMENT)	SENIOR LECTURER
7.	MS. FARIDAH BINTI GHAFAR	MASTER OF SCIENCE	SENIOR LECTURER
8.	INDOK NURUL HASYIMAH BINTI MOHD AMIN (Assoc. Prof. Dr.)	PhD (CHEMICAL ENGINEERING & PROCESS)	ASSOCIATE PROFESSOR
9.	KELLY YONG TAU LEN (Assoc. Prof. Dr.)	PhD (MECHANICAL SCIENCE & ENGINEERING)	ASSOCIATE PROFESSOR
10.	LAW JENG YIH (Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
11.	MS. MARMY ROSHAIDAH BINTI MOHD SALLEH	MASTER OF ENGINEERING	LECTURER
12.	MS. NADIA BINTI ISA (SL)	MASTER OF SCIENCE	SENIOR LECTURER
13.	MS. NAZERAH BINTI AHMAD	MASTER OF ENGINEERING	LECTURER
14.	NOR AINI BINTI BUROK (Ts.)	MASTER OF INDUSTRIAL SAFETY MANAGEMENT	SENIOR LECTURER
15.	NOR SHAHIRAH BINTI MOHD NASIR (Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
16.	MS. NORULAKMAL BINTI NOR HADI	MASTER OF SCIENCE	SENIOR LECTURER
17.	MS. RABIATUL ADAWIAH BINTI MAT NOOR (SL)	MASTER OF SCIENCE	LECTURER
18.	MR. SYAHIDI FADZLI BIN ALFAN	MASTER OF SCIENCE (INDUSTRIAL & TECHNOLOGY MANAGEMENT)	LECTURER
19.	MR. SYED AZHAR BIN SYED AB RAHMAN	MASTER OF SCIENCE (CHEMICAL ENGINEERING)	SENIOR LECTURER
20.	WAN NOOR AIDAWATI BINTI WAN NADHARI (Dr.)	PhD (BIORESOURCE, PAPER AND COATINGS TECHNOLOGY)	SENIOR LECTURER
21.	ZAINAL ABIDIN BIN MOHD YUSOF (Ts.)	MASTER OF SCIENCE	SENIOR LECTURER

22.	ZULHAFIZ BIN TAJUDIN (Ts. Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
23.	MS. ZURAIDAH BINTI RASEP (SL)	MASTER OF ENGINEERING	LECTURER

BIOENGINEERING TECHNOLOGY SECTION

SL: STUDY LEAVE

NO.	NAME	HIGHEST QUALIFICATION	DESIGNATION
1.	MS. FARA WAHIDA BINTI AHMAD HAMIDI (Head of Section)	MASTER OF SCIENCE (BIOPROCESS ENGINEERING)	LECTURER
2.	LEONG CHEAN RING (Dr)	PhD IN MEDICINE	SENIOR LECTURER
3.	MOHAMAD ZULKEFLEE BIN SABRI (Ts. Dr)	MASTER OF ENGINEERING	LECTURER
4.	NIK IDA MARDIANA BINTI NIK PA (Dr.)	MASTER OF SCIENCE	SENIOR LECTURER
5.	MS. NORHANI BINTI JUSOH (SL)	MASTER OF ENGINEERING	SENIOR LECTURER
6.	MS. NURDIYANA BINTI HUSIN	MASTER OF SCIENCE	LECTURER
7.	NURUL FAEZAWATY BINTI JAMALUDIN (Ts.)	MASTER OF SCIENCE	SENIOR LECTURER
8.	ROZYANTI BINTI MOHAMAD (Ts. Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
9.	RUZAINAH BINTI ALI @JAAFAR (Assoc. Prof. Dr.)	PhD (BIOTECHNOLOGY)	ASSOCIATE PROFESSOR
10.	TONG WOEI YENN (Dr.)	PhD IN MICROBIOLOGY	SENIOR LECTURER
11.	ZAINATUL 'ASYIQIN BINTI SAMSU (Ts. Dr)	MASTER OF SCIENCE	LECTURER

ENVIRONMENT AND POLYMER ENGINEERING TECHNOLOGY SECTION

SL: STUDY LEAVE

NAME	HIGHEST QUALIFICATION	DESIGNATION
FAHMI ASYADI BIN MD YUSOF (Dr) (Head of Section)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
AMELIA BINTI MD SOM (Dr)	PhD (GEOENVIRONMENT ENGINEERING)	SENIOR LECTURER
AHMAD NAIM BIN AHMAD YAHAYA (Assoc. Prof. Ts. Dr.)	PhD (ENVIRONMENT ENGINEERING TECHNOLOGY)	ASSOCIATE PROFESSOR
MS. KHAIRUL NADIAH BINTI IBRAHIM	MASTER OF TECHNOLOGY	SENIOR LECTURER
MR. MOHD SYAZWAN BIN MOHD GHAZALI (SL)	MASTER OF SCIENCE	LECTURER
NOR ZALINA BINTI KASIM (Dr.)	PhD (CIVIL ENGINEERING)	SENIOR LECTURER
ROBERT THOMAS BACHMANN (Prof. Dr.)	PhD (ENVIRONMENTAL ENGINEERING TECHNOLOGY)	PROFESSOR
SITI NOORAIN BINTI ROSLAN (Dr)	DOCTOR OF ENGINEERING (CIVIL & ENVIRONMENTAL ENGINEERING)	SENIOR LECTURER
Ts. Dr NORILHAMIAH BINTI YAHYA	PhD (FUEL CELL ENGINEERING)	SENIOR LECTURER
MS. MAZLINA BINTI GHAZALI (Ts.)	BACHELOR OF ENGINEERING (HONS) IN POLYMER ENGINEERING	ASST. LECTURER
MR. MOHD EDYAZUAN BIN AZNI (SL)	MASTER OF ENG. TECH. (GREEN & ENERGY EFFICIENT BUILDINGS)	LECTURER
MR. MUAZZIN BIN MUPIT	MASTER OF SCIENCE	SENIOR LECTURER
MUZAFAR BIN ZULKIFLI (Ts. Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
NOOR FAIZAH BINTI CHE HARUN (Dr)	DOCTOR OF ENGINEERING (ENVIRONMENTAL CHEMISTRY & ENGINEERING)	SENIOR LECTURER
NOR NADIAH BINTI MOHAMAD YUSOF (Dr)	PhD (ENERGY & ENVIRONMENT SCIENCE)	SENIOR LECTURER
ONG SIEW KOOI (Assoc. Prof. Ts. Dr.)	PhD (POLYMER TECHNOLOGY)	ASSOCIATE PROFESSOR
RAJA NAZRUL HAKIM BIN RAJA NAZRI (Dr)	PhD (MATERIAL & METALLURGICAL ENGINEERING)	SENIOR LECTURER
NADIA BINTI RAZALI (Dr.)	PhD (CONSTRUCTION)	SENIOR LECTURER
MS. SUHAINI BINTI MAMAT	MASTER OF ENGINEERING	LECTURER
YUSRIAH BINTI LAZIM (Dr.)	PhD IN MATERIAL SCIENCE AND ENG.	SENIOR LECTURER
ZAIHAR BIN YAACOB (Dr.)	MASTER OF ENGINEERING	SENIOR LECTURER

FOOD ENGINEERING TECHNOLOGY SECTION

SL: STUDY LEAVE

NO.	NAME	HIGHEST QUALIFICATION	DESIGNATION
1.	SITI FATIMAH BINTI IBRAHIM (Dr.) (Head of Section)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
2.	ABDUL MANAN BIN DOS MOHAMED (Assoc. Prof. Dr.)	PhD (BIOSCIENCE & BIOTECHNOLOGY)	ASSOCIATE PROFESSOR
3.	MS. FARAH SALINA BINTI HUSSIN	PhD (FOOD BIOTECHNOLOGY)	SENIOR LECTURER
4.	HARUN BIN SARIP (Assoc. Prof. Ts. Dr.)	PhD (FOOD TECHNOLOGY)	ASSOCIATE PROFESSOR
5.	KHAIRUL FAIZAL BIN PA'EE (Dr.)	PhD (FOOD & NUTRITIONAL SCIENCE)	SENIOR LECTURER
6.	MS. LILY SUHAILA BINTI YACOB	MASTER OF ENVIRONMENT (ENVIRONMENTAL SCIENCE)	LECTURER
7.	MS. MASNIZA BINTI MOHAMED @ MAHMOOD	PhD (KEJURUTERAAN KIMIA DAN PROSES)	SENIOR LECTURER
8.	NOR ZANARIAH BINTI SAFIEI (Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
9.	NORIZA BINTI AHMAD (Ts. Dr)	PhD (FOOD SCIENCE & TECHNOLOGY)	SENIOR LECTURER
10.	MS. RINANI SHIMA BINTI ABD. RASHID (SL)	MASTER OF SCIENCE (FOOD TECHNOLOGY)	SENIOR LECTURER
11.	SHARIFAH SOPLAH BINTI SYED ABDULLAH (Ts Dr)	PhD (ENVIRONMENTAL ENGINEERING)	SENIOR LECTURER
12.	MUHAMAD YUSUF BIN HASAN (Ts. Dr.)	MASTER OF SCIENCE (PROCESS PLANT MANAGEMENT)	SENIOR LECTURER
13.	MOHD ZULKHAIRI BIN ABDUL RAHIM (Dr)	PhD (CHEMISTRY)	SENIOR LECTURER
14.	MR. MUHAMMAD SHARIR BIN ABDUL RAHMAN	MASTER OF CHEMICAL ENGINEERING	LECTURER
15.	SHARIFAH MARIAM BINTI SAYED HITAM (Ts. Dr.)	PhD (BIOPROCESS ENGINEERING)	SENIOR LECTURER

CHEMICAL ENGINEERING SECTION

SL: STUDY LEAVE

NO.	NAME	HIGHEST QUALIFICATION	DESIGNATION
1.	NOOR AINA BINTI MOHD NAZRI (Dr.) (Head of Section)	PhD IN ENGINEERING (GAS)	SENIOR LECTURER
2	WONG CHEE SIEN (Dr.)	PhD (BIOPROCESS ENGINEERING)	SENIOR LECTURER
3.	CHIN LIP HAN (Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
4.	CHONG YUAN FOONG (IR.)	BACHELOR OF ENGINEERING (CHEMICAL)	SPECIALIST
5.	FARRA WAHIDA BINTI SHAARANI (Dr.)	PhD (CHEMICAL PROCESS ENGINEERING)	SENIOR LECTURER
6.	MS. NOR NABIHA BINTI MD ZAN	MASTER (ENGINEERING SCIENCE)	LECTURER
7.	RAPIDAH BINTI OTHMAN (Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
8.	SITI NURUL ATIKAH BINTI ABD HALIM (Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
9.	YUHANEES BINTI MOHAMED YUSOF (Dr.)	PhD (APPLIED SCIENCE)	SENIOR LECTURER
10.	SUZANA BINTI WAHIDIN (Assoc. Prof. Dr)	PhD (BIOPROCESSING ENGINEERING)	ASSOCIATE PROFESSOR

STUDENT DEVELOPMENT SECTION

SL: STUDY LEAVE

NO.	NAME	HIGHEST QUALIFICATION	DESIGNATION
1.	MS. INTAN NORJAHAN BINTI AZMAN (Head of Section)	MASTER OF ARTS IN ENGLISH LANGUAGE	LECTURER
2.	ANISAH BAHYAH AHMAD (Dr.)	PhD (ISLAMIC CIVILZATION)	SENIOR LECTURER
3.	AZMAN BIN YUSOF (Assoc. Prof. Dr.)	PhD (PHILOSOPHY AND CIVILIZATION STUDIES)	ASSOCIATE PROFESSOR
4.	AZU FARHANA BINTI ANUAR	MASTER OF ARTS (ENGLISH COURSE)	LECTURER
5.	MS. MARIATI BINTI MOHD SALLEH	MASTER OF EDUCATION	LECTURER
6.	MS. NOORHAYATI BINTI SAHARUDDIN	MASTER OF ARTS IN ENGLISH LANGUAGE	SENIOR LECTURER
7.	MS. ROSIAH BINTI OTHMAN	MASTER OF CORPORATE COMMUNICATION	LECTURER
8.	MS. SA'ADIAH BINTI HUSSIN	MASTER OF SCIENCE (CORPORATE COMMUNICATION)	SENIOR LECTURER

IIIP SECTION

SL: STUDY LEAVE

NO.	NAME	HIGHEST QUALIFICATION	DESIGNATION
1.	ABD RAZAK BIN HAJI MOHD YUSOFF	MASTER OF BUSINESS ADMINISTRATION	LECTURER
2.	NORAZMI BIN OMAR	MASTER OF BUSINESS ADMINISTRATION	LECTURER

NATIONAL REQUIREMENT

MPU 3113 HUBUNGAN ETNIK
MPU 3173 PENGAJIAN MALAYSIA 3
MPU 3123 TAMADUN ISLAM & TAMADUN ASIA (TITAS)
MPU 3143 BAHASA MELAYU KOMUNIKASI 2
MPU 3333 ISU-ISU KONTEMPORARI MUSLIM DI MALAYSIA/
MPU 3343 CULTURE AND LIFESTYLE IN MALAYSIA
MPU3412 CAREER GUIDANCE 2
MPU3422 COMMUNITY SERVICE 2
MPU3432 CULTURE 2
MPU3442 RAKAN MASJID 2
MPU3452 SISWA-SISWI BOMBA DAN PENYELAMAT 2
MPU3462 SISWA-SISWI PERTAHANAN AWAM 2
MPU3472 SPORTS MANAGEMENT 2

MPU 3113 Hubungan Etnik

Rationale for inclusion of the course in the program:

Kursus Hubungan Etnik ini bertujuan untuk melahirkan pelajar yang mempunyai pengetahuan dan penghayatan terhadap nilai-nilai mulia dan sejarah.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Menerangkan peranan pluraliti budaya, masyarakat dan kumpulan etnik dalam memupuk perpaduan
2. Mengenalpasti cabaran pluralisasi budaya dan pelaksanaannya dalam konteks permuafakatan sosial di Malaysia
3. Mengaplikasi kemahiran sosial dalam kalangan pelajar ke arah mewujudkan masyarakat bersatu padu
4. Menganalisis isu-isu dan cabaran dalam konteks hubungan etnik di Malaysia

MPU 3173 Pengajian Malaysia 3

Rationale for inclusion of the course in the program:

This unit focuses on the history and politics, the constitution of Malaysia, community and solidarity, development and other issues of national concern. The objective of this unit is to produce students who understand the socio-cultural society, the process of nation-building and political structure in Malaysia as well as to appreciate the role of Malaysia at the international level.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the history of the nation and the development of socio-cultural aspects of society, politics and economy
2. Discuss the main components of the systems and the military administration of the country
3. Explain the historical and political process to achieve independence
4. Interpret the key government structure and its contribution to national development related to current issues happens in Malaysia.

MPU 3123 Tamadun Islam & Tamadun Asia (TITAS)

Rationale for inclusion of the course in the program:

Kursus TITAS disediakan untuk melahirkan pelajar yang mempunyai pengetahuan dan penghayatan terhadap nilai-nilai mulia dan sejarah.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Menyenaraikan konsep-konsep utama Tamadun Islam dan Tamadun Asia.
2. Menerangkan kepentingan dan peranan agama dan budaya masing-masing dalam kehidupan.
3. Mengaplikasi kemahiran komunikasi secara berkesan dalam penulisan dan lisan di peringkat individu, kumpulan dan masyarakat.

MPU 3143 Bahasa Melayu Komunikasi 2

Rationale for inclusion of the course in the program:

Kursus ini adalah untuk membolehkan pelajar menguasai kemahiran asas bahasa Melayu dan kecekapan berbahasa untuk berkomunikasi bagi melahirkan idea dan perasaan secara lisan dan penulisan.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Mengenal pasti sistem bunyi, sistem ejaan rumi, kosa kata dan tatabahasa bahasa Melayu dalam ayat mudah
2. Mendengar, memahami pertuturan dan bertutur dalam pelbagai situasi harian
3. Mengenal pasti teknik-teknik khusus berkomunikasi dalam perbualan formal atau tidak formal

MPU 3333 Isu-Isu Kontemporari Muslim Di Malaysia

Rationale for inclusion of the course in the program:

Kursus ini memperkenalkan realiti dan cabaran masyarakat dalam menghayati Islam sebagai Ad-Deen. Pelbagai isu dan realiti umat Islam daripada sudut politik, ekonomi dan sosial yang melakari senario umat Islam di Malaysia dibincangkan. Kursus ini juga melangkau ke arah potensi kejayaan umat Islam dengan fakta-fakta dan dalil wahyu.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Menerangkan sejarah dan aspek-aspek perkembangan Islam di Malaysia
2. Menghuraikan realiti dan isu-isu kontemporari yang melingkungi umat Islam di Malaysia
3. Menjelaskan peranan dan masa depan Islam dalam konteks semasa dan wahyu.

MPU 3343 Culture And Lifestyle In Malaysia

Rationale for inclusion of the course in the program:

The main objective of this course is to expose students to the rich culture and lifestyle in Malaysia. This is to foster and instill national unity. It will introduce various cultures to the local as well as the international students. This course will help to bridge the gap among students as well as further develop the understanding and respect for Malaysian culture and lifestyle.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Distinguish acceptable cultural practices, norms and lifestyle in Malaysia
2. Demonstrate clear understanding of cultural values, ethnicity and lifestyle in Malaysia
3. Communicate information on cultural and lifestyles issues

MPU 3412 Career Guidance 2

Rationale for inclusion of the course in the program:

This course is one of the co-curriculum modules offered to develop well-rounded individuals through involvement in social and community activities. Specifically, it enables students to understand the importance of career planning. It also promotes soft skills that can be applied in their future careers. Apart from that, it creates a better understanding about potential employer's expectations in job hunt.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Identify their personality types towards career & leadership
2. Determine ways in managing stress in the workplace
3. Demonstrate awareness of real work environment and the industry
4. Outline their future career and targets

MPU 3422 Community Service 2

Rationale for inclusion of the course in the program:

This course is one the co-curriculum modules offered to develop well-rounded individuals through involvement in high impact social and community activities. Specifically, it aims to develop interest among the students to participate in community service programmes. It also enables student to understand the importance of performing community service and the ways to implement the programmes and activities. Besides that, it provides better understanding to the students on the values, ethics and benefits of carrying out community service programmes.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Organize and participate in large scale/ high impact community service programmes and activities
2. Apply knowledge learnt in course in community service programmes and activities
3. Demonstrate entrepreneurship skills in community service programmes and activities
4. Explain the values, ethics and benefits of participating in community service programmes and activities.

MPU 3432 Culture 2

Rationale for inclusion of the course in the program:

This course is one of the co-curriculum modules offered to develop well-rounded individuals through involvement in social and community activities. Specifically, it aims to develop students' personality and social interaction skills, as well as foster closer relationships among the students in the university through the organization of and participation in cultural activities.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply knowledge gained in planning and organizing a cultural event
2. Demonstrate appropriate skills in organising a culture event
3. Evaluate the effectiveness of the management of a cultural event.

MPU3442 Rakan Masjid 2

Rationale for inclusion of the course in the program:

This course is one of the co-curriculum modules offered to develop well-rounded individuals through involvement in social and community activities. Specifically, it aims to give exposure to students on managing mosque effectively and implementing various activities related to the mosque. This is to enable students to play their role in developing the ummah through the mosque.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain about the importance of religious programmes implemented in Malaysia
2. Practice activities in relation to significant events in Islam
3. Recognise the functions of agencies/bodies relevant to the development of Islam in Malaysia

MPU3452 Siswa Siswi Bomba & Penyelamat 2

Rationale for inclusion of the course in the program:

This course is one of the co-curriculum modules offered to develop well-rounded individuals through involvement in social and community activities. Specifically, it gives exposure on the introduction to Malaysian Fire and Rescue Department, foot marching technique, fire rescue, ascending and descending technique and basic emergency aid.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Organize a project (theory and practically about BOMBA activities)
2. Communicate and demonstrate leadership and team skills through BOMBA activities (rescue, fire rescue and first aid)
3. Apply appropriate fundamental knowledge of rescue, fire rescue and first aid.

MPU3462 Pasukan Siswa-Siswi Pertahanan Awam 2

Rationale for inclusion of the course in the program:

This course is one of the co-curriculum modules offered to develop well-rounded individuals through involvement I social and community activities. Specifically, it gives exposure on the introduction on the instruction to Malaysian Civil Defense Force, foot marching technique, fire rescue, ascending and descending technique and basic emergency aid.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Communicate and demonstrate leadership and team skills through BOMBA activities (rescue, fire rescue and first aid).
2. Participate actively in Project (theory and practically about JPAM activities).
3. Apply appropriate fundamental of rescue, fire rescue and first aid.

UNIVERSITY REQUIREMENT

WEB10302 Fundamental English
WEB20202 Professional English 1
WEB20302 Professional English 2

MPU3242 Innovation Management

WMD10101 Mandarin 1
WMD10201 Mandarin 2
WAD10101 Arabic 1
WAD10201 Arabic 2

WIB41009 Industrial Training

WEB 10302 Fundamental English

Rationale for inclusion of the course in the program:

Rationale for inclusion of the course in the program: This course is to enable students to enhance their learning of English vocabulary; understand the structure of simple, compound and complex sentences: as well as explain and identify errors in sentences. This course also encourages students to share opinions and suggestions based on chosen text; and utilize vocabulary skills and basic writing in producing article review. Students will also be exposed to correct and effective presentation techniques

Learning Outcomes:

Upon completion of this course students should be able to:

1. Acquire grammar and vocabulary skills to construct sentence structures
2. Produce an article review based on a chosen text
3. Present using appropriate presentation techniques

WEB 20202 Professional English 1

Rationale for inclusion of the course in the program:

This module is aimed to enable students to utilize various skills in professional communication. The topics taught are business correspondence (business letters, proposals. memo, e-mail & fax) meetings and documentations of a meeting and job hunting skills.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Employ appropriate mechanics in writing business letters, memos, e- mails, faxes and proposals
2. Demonstrate the ability to conduct, participate and compile relevant information for meeting
3. Apply job hunting skills by preparing cover letter and resume, and promote oneself during interview

WEB 20302 Professional English 2

Rationale for inclusion of the course in the program:

This course teaches students on effective report writing and how to utilize skills in writing a technical report_ Students would be able to transfer information from linear to non-linear format In addition. Students would be able to utilize all skills in identifying a personnel in the industry for information seeking activity via interview questions and interviewing techniques.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply appropriate language for report writing
2. Produce reports with their necessary components by
3. Present information orally

MPU3242 Innovation Management

Rationale for inclusion of the course in the program:

This course is to help students to understand the complex process of innovation which depends on people and their interactions; to stimulate new thinking rather than prescribe some definitive methodology; to understand the issues involved in being an innovator and the culture for supporting innovation; understand the critical issues that organizations need to develop to support innovation; to be able to develop a marketing strategic planning and able to do qualitative and quantitative market analysis; to understand the process of product development and market testing; and to understand commercialization strategy i.e. marketing mix and future plan. These teaching components would benefit the students in becoming future entrepreneurs.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the importance of innovation in organisation
2. Analyse the different types of innovation, products classes and the impact to the industry.
3. Distinguish the steps in the innovation process
4. Assess the key challenges to innovation.
5. Develop a viable innovative project.

WMD10101 Mandarin 1

Rationale for inclusion of the course in the program:

Having a basic command of Mandarin will enhance learners' communicative ability, which enables them to have an extra edge in the job market. Thus, the objective of the course is to introduce basic Chinese with emphasis on conversations, which will enable the learner to exchange conversations in structured sentences.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Use Mandarin in simple conversation, express feelings and emotions as well as exchange opinions
2. Write basic Chinese characters.

WMD 10201 Mandarin 2

Rationale for inclusion of the course in the program:

Having a basic command of Mandarin will enhance learners' communicative ability, which enables them to have an extra edge in the job market. Thus, the objective of the course is to introduce basic Chinese with emphasis on conversation, which will enable learners to exchange conversations in structured sentences using slightly difficult vocabularies.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Use Mandarin in a more complex conversation, express feelings and emotions as well as exchange opinions
2. Write Chinese characters.

WAD 10101 Arabic 1

Rationale for inclusion of the course in the program:

This course is intended to expose the student with conversation skill of beginner-level Arabic language. Students will be familiarized with elemental Arabic grammar and be able to construct a Arabic report and essay. This course seeks to develop passionate of students to the course, alphabetical, vocabulary, industrial terms, nouns, verbs, basic grammar and explain the benefit of learning Arabic to the students. Student are also expected to be able to write an Arabic sentences.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain basic Arabic grammar within the scope of the course and write basic Arabic sentences and questions based on what they have learnt in the course
2. Communicate orally in Arabic at a beginner's level

WAD 10201 Arabic 2

Rationale for inclusion of the course in the program:

This course is intended to familiarize students with conversational skills in Arabic at a beginner level. It exposes students with basic Arabic grammar in order to enhance their ability to construct a report and essay in the language. This course seeks to develop passionate and self- motivated students of Arabic by enhancing their basic grammatical knowledge in the language as well as their knowledge of daily and industry focused terms and phrases in an Arabic-speaking setting.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Produce written work using Arabic knowledge and skills learnt in the course and Communicate in basic Arabic language in written and verbal form.
2. Prepare project using content and skills learnt in the course.

WIB41009 Industrial Training

Rationale for inclusion of the course in the program:

This course is aimed at exposing students to real industrial environment and the opportunity to practice the knowledge and skills acquired during their academic years.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply the skills and knowledge that they have gained throughout their academic years in the companies that they are attached to.
2. Explain new knowledge and skills acquired during Industrial attachment
3. Handle and perform specific task with minimum supervision and achieve the companies' expectation.
4. Display safety and health practices in industry.
5. Show good analytical and problem solving skills.
6. Demonstrate the ability to work in team either as a leader or team member and good communication skills.

COMMON CORE

CLB 19203 Mathematics 1
WBB20103 Technopreneurship
CLB 10703 Physical Chemistry
CLB 19303 Mathematics 2
CLB 10803 Analytical & Organic Chemistry
CLB40002 Engineering Technologist in Society

CLB19203 Mathematics 1

Rationale for inclusion of the course in the program:

This course is aimed to prepare the student to be well versed in the mathematical knowledge needed for applying the concepts of calculus in applications of science and engineering. They should also be well prepared for courses in differential equations, linear algebra and advanced calculus.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the basic of trigonometry functions, derivatives and integrations.
2. Apply the skills to solve problems in chemicals and process engineering.
3. Solve derivatives and integration for various types of functions.

WBB20103 Technopreneurship

Rationale for inclusion of the course in the program:

Across the world, entrepreneurial ventures are creating and bringing to market new products and services that make our lives easier, enhance our productivity at work, improve our health, and entertain us in new and fascinating ways. Thus, the purpose of this course is to provide students with a thoughtful, practical guide to the process of successfully launching and growing an entrepreneurial venture. In order to achieve this, the course provides students with a thorough analysis of the entrepreneurial process.
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Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe business environment and management within the scope of the course
2. Estimate operation capacity and material requirement planning
3. Prepare sale forecast and financial projection statement.
4. Develop a viable business plan and be involved in entrepreneurship activities.

CLB10703 Physical Chemistry

Rationale for inclusion of the course in the program:

This course will provide students with knowledge and hands on skill in physical chemistry. They will be equipped with knowledge in thermodynamic, equilibrium as well as kinetic study. It will create awareness on importance of physical chemistry in chemical engineering technology and its related application.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply the basic physical chemistry principles such as thermodynamic, equilibrium concept and chemical kinetic.
2. Discuss the results of experimental work that based on basic energy concept in the following topics; thermodynamic, equilibrium concept and chemical kinetic.
3. Collaborate with team members in performing a good laboratory techniques such as planning, running, observing, recording, interpreting, evaluating and reporting data effectively.

CLB19303 Mathematics 2

Rationale for inclusion of the course in the program:

This course is aimed at providing students with the fundamental concepts in advanced calculus which is applicable for chemical engineering technology.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Solve advanced differentiation questions such as gradient functions, rate of changes, small increment and approximation by using implicit differential, total differential and second order derivatives.
2. Solve differential equations by using the properties of the Laplace Transform, evaluation and the use of inverse of Laplace Transform.
3. Sketch area under one curve, volumes of solid revolution, numerical integration and find the solutions.
4. Solve the problems for first order differential equations and second order differential problems.

CLB10803 Analytical & Organic Chemistry

Rationale for inclusion of the course in the program:

This course provides students with the basic concepts in chemistry as well as the analytical techniques used in the field of chemistry.

Learning Outcomes:

Upon completion of this course students should be able to:

1. State and apply the phenomena, basic concepts, laws and principles in analytical and organic chemistry.
2. Handle chemicals and perform experiments effectively.
3. Analyze and interpret organic compounds from analysis output using analytical equipment.

CLB40002 Engineering Technologist in Society

Rationale for inclusion of the course in the program:

Engineering Technology is devoted not only to the acquisition of technical skills, but is also concerned with the appreciation of the place and potential of technologies in society. There are many challenges in society derive from the expansion of knowledge, expertise and information. The acquisitions of skills enable students to develop problem solving strategies and procedures of paramount importance. The ability to discern the key problems in a given task will benefit the student greatly and will ultimately lead to increased innovation in the work place.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Identify the scope of engineering ethics and its connection with the career of an engineering technologist.
2. Revise the potential issues on career of an engineering technologist in various aspects such as job aspects, job requirements, job challenges, job markets, politics, economics, society, public, personal matter, morality, environmental and others.
3. Relate the ethics solution on the respective issues.
4. Assemble the information of the issue on engineering technologist in term of safety and risk using quantitative risk assessment (QRA) software.

DISCIPLINE CORE

CEB20003 Introduction to Environmental Engineering
CLB10402 Fundamental of Electric & Electronics
CLB10903 Engineering Drawing and Computing
CLB10904 Chemical Process Principles
CLB11003 Fluid Mechanics
CLB20903 Engineering Statistics
CLB21403 Engineering Design
CLB21303 Process Instrumentation and Control
CKB20104 Reaction Engineering
CKB30103 Industrial Safety & Health
CLB20403 Thermodynamics
CLB21204 Transport Process Principles

CPB 49804 Final Year Project (Proposal)
CPB 49806 Final Year Project (Implementation)

CEB20003 Introduction to Environmental Engineering Technology

Rationale for inclusion of the course in the program:

The course will provide students with basic principles of environmental engineering technology with the relation to natural system of the environment, principles of pollution and treatment/control methods of various environmental pollutants. Several important law and regulations will enhance student's knowledge on institutional environment.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Estimate the impacts of natural and anthropogenic activities towards the environment.
2. Analyze various environmental processes and engineering technology applications in mitigating, controlling and treating pollutions.
3. Perform group works on environmental quality analysis techniques in the laboratory or fieldworks to quantify various environmental systems.

CLB10402 Fundamental of Electric & Electronics

Rationale for inclusion of the course in the program:

This is an introductory course aimed at providing students with the fundamentals concept and knowledge of electrical technology. This course will provide students with skills and understanding to operate electrical tools and machines safely and effectively.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply basic principles of electricity, circuit theorems, electrical and electronics system, and electrical machines.
2. Explain experiments and project according to the standard operating procedure given.
3. Describe basic principles and practices from electrical fundamental disciplines to solve electrical problems.

CLB10903 Engineering Drawing And Computing

Rationale for inclusion of the course in the program:

This introductory course aimed at providing students with the basic concepts of computer applications used in the current practice and its application in chemical engineering technology. This course will equip students with concepts and knowledge that are essential to encounter any related problems that need to be solved using a computer application including using computer for engineering design..

Learning Outcomes:

Upon completion of this course students should be able to:

1. Identify the basic terminology, symbols, tools and features used in computing and engineering drawing.
2. Demonstrate the understanding of computer application, technical drawing and chemical process diagram.
3. Demonstrate the usage of Microsoft Office and CAD software.

CLB10904 Chemical Process Principles

Rationale for inclusion of the course in the program:

This is an introductory course aimed at providing students with the fundamental concepts of chemical process which form the foundation for their study in later years. These concepts are essential in preparing students to formulate and solve material and energy balances on chemical process systems.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Organize known information about process variables on individual process units and multiple-unit processes.
2. Solve material balances and energy balances to account for the flows to and from the process and its units.
3. Examine and analyze pertinent data to solve material and energy balance problems.

CLB11003 Fluid Mechanics

Rationale for inclusion of the course in the program:

This course is an introduction to fluid mechanics and emphasizes fundamental concepts and problem solving techniques. Topics to be covered include fluid properties, pressure and fluid statics, control volume analysis and internal flow (flow in pipes and conduits), external flow (drag and lift) and equipments in fluid flow. The student also will be familiarized with the basic concepts in selecting and analyzing components of fluid systems.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the fundamental concepts in fluid static and dynamic.
2. Conduct experiments related to fluid static and dynamic by following standard operation procedure and safety awareness.
3. Apply the basic theory of fluid in solving problems related to fluid static and dynamic.

CLB20903 Engineering Statistics

Rationale for inclusion of the course in the program:

This course is aimed at introducing students to the appropriate statistical methods in engineering.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Select appropriate statistical models to calculate the probability of an event
2. Apply appropriate statistical methods to solve statistical problems
3. Adapt their lesson on statistical software to analyze data
4. Solve practical problems involving statistical data.

CLB21403 Engineering Design

Rationale for inclusion of the course in the program:

This course provides fundamental background in utilizing Computer Aided Drafting and Design (CADD) in engineering drawing to the students which will enable them to work more effectively in the various fields of engineering.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Practice 3D assembly and documentation using CAD software.
2. Produce 2D drawing of process plant layout using CAD software.
3. Demonstrate 2D and 3D process plant drawing including equipment, piping and structure.

CLB21303 Process Instrumentation and Control

Rationale for inclusion of the course in the program:

This course will impart knowledge to the students on various aspects on fundamental of instrumentation and basic control system in the chemical industries.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Differentiate various types of process instrumentation and control system based on real applications in chemical industries.
2. Evaluate results, graphs and controller tuning data obtained from practical session to provide valid conclusion.
3. Demonstrate understanding towards the importance of employing appropriate process instrumentation and control in chemical industries

CKB20104 Reaction Engineering

Rationale for inclusion of the course in the program:

This course is aimed at providing students with the understanding of basic principles and fundamentals in chemical reaction kinetics, types of reactor and its design characteristics, and heterogeneous reactions. This knowledge is vital since students will use these fundamentals in applications of chemical engineering technology.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Design chemical reactors for isothermal and non-isothermal processes.
2. Solve problems related to chemical reactions based on the fundamental concepts.
3. Follow procedures accurately and conduct experiments safely.

CKB30103 Industrial Safety & Health

Rationale for inclusion of the course in the program:

To impart the knowledge and demonstrate an awareness of industrial safety and health by implementing the techniques, legal, society and cultural issues in making the work place as safe as possible.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Display the ability to recognize type of hazards related to occupational safety and health, determine an appropriate control measures and evaluate the risks associate with it.
2. Demonstrate the ability to work in team and communicate effectively as a leader or ordinary member.
3. Analyze the safety and health issues at workplace by comparing to Malaysian laws and regulations.

CLB20403 Thermodynamics

Rationale for inclusion of the course in the program:

The course is aimed at providing students with the basic understanding on theory and application of chemical engineering thermodynamics. It is essential for engineering technology students to acquire this fundamental concept since thermodynamics is one of the pillars supporting the engineering science.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyse engineering problem based on thermodynamics principles and concepts and solve it by using thermodynamics property tables and figures.
2. Perform laboratory experiments and relate the collected data with thermodynamic tables and figures.
3. Solve problems related to the application of thermodynamics.

CLB21204 Transport Process Principles

Rationale for inclusion of the course in the program:

This is an introductory course aimed at providing students with the study of heat transfer by conduction, convection, and radiation with relative to engineering application. Students also will learn on several chemical process like distillation, absorption and extraction process. The course will provide students with the knowledge related to the utilization and application of a process heat transfer and mass transfer in an industrial area. Students will apply the knowledge of heat and mass transfer in designing related major equipment.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Show ability to identify problems, formulate solutions and solve using heat and mass transfer principles.
2. Perform laboratory experiments and relate the collected data with the concepts and laws of heat and mass transfer.
3. Design heat and mass transfer equipment and solve engineering problems related to heat and mass transfer.

CPB49804 Final Year Project (Proposal)

Rationale for inclusion of the course in the program:

This course introduces students with ability and skills in conducting a technical project based on their specialization area. Its provide students with technical writing and presentation skills

Learning Outcomes:

Upon completion of this course students should be able to:

1. Demonstrate the abilities to plan and to work effectively
2. Analyze related literature for the proposed research problems.
3. Propose specific research method to solve the research problems.
4. Produce a feasible project proposal in accordance to the specified standard format.
5. Present and defend project proposal in a clear and concise manner.

CPB49806 Final Year Project (Implementation)

Rationale for inclusion of the course in the program:

This course is a progression of FYP1 focussing on enhancing the abilities and skills in conducting project based on their specialization area. It provides students with technical writing and presentation skills

Learning Outcomes:

Upon completion of this course students should be able to:

1. Manage and execute project plan in solving research problems
2. Analyse project results using appropriate technique or
3. Produce a project report in accordance to the specified standard format.
4. Present and defend project outcomes effectively.

BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (HONS) IN PROCESS

1. **Program Structure**
2. **Major Courses**

PROGRAM STRUCTURE

- ***subject to amendments***

YEAR 1: SEMESTER 1

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLB19203	Mathematics 1	3	28	24	0	6	62	120
2	CLB10903	Engineering Drawing & Computing	3	15	30	36	9	30	120
3	WEB20202	Professional English 1	2	10	16	0	5	49	80
4	MPU3123/ MPU3143	Tamadun Islam & Tamadun Asia (TITAS)/ Bahasa Melayu Komunikasi 2	3	10	0	0	46	64	120
5	WEB 10302	Fundamental English	2	10	16	0	4	50	80
6	CLB40002	Engineering Technologist in Society	2	14	0	23	5	38	80
7		Foreign Language 1	1	21	0	0	4	25	50
		TOTAL	**16**	**108**	**86**	**59**	**79**	**318**	**650**

YEAR 1: SEMESTER 2

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLB10703	Physical Chemistry	3	17	14	37	6	46	120
2	CLB19303	Mathematics 2	3	28	24	0	6	62	120
3	CLB21403	Engineering Design	3	15	30	36	9	30	120
4	MPU3113/ MPU3173	Hubungan Etnik / Pengajian Malaysia 3	3	17	0	0	25	78	120
5	CLB10904	Chemical Process Principles	4	28	14	59	7	53	161
6	CLB11003	Fluid Mechanics	3	28	0	51	5	36	120
7		Foreign Language 2	1	21	0	0	4	25	50
		TOTAL	**20**	**154**	**82**	**183**	**62**	**330**	**811**

YEAR 2: SEMESTER 3

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLB10402	Fundamental of Electric & Electronics	2	14	0	27	4	35	80
2	CLB10803	Analytical & Organic Chemistry	3	30	0	38	7	45	120
3	CLB20403	Thermodynamics	3	17	18	37	6	42	120
4	CLB21204	Transport Process Principles	4	28	18	29	5	80	160
5	CEB20003	Introduction to Environmental Engineering Technology	3	22	0	43	9	46	120
6	MPU3333/ MPU3343	Isu-isu Kontemporari Muslim di Malaysia/ Culture and Lifestyle in Malaysia	3	12	0	0	30	78	120
		TOTAL	**18**	**123**	**36**	**174**	**61**	**326**	**720**

YEAR 2: SEMESTER 4

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WEB20302	Professional English 2	2	13	13	0	2	52	80
2	CPB40003	Introduction Renewable Energy	3	14	14	10	9	73	120
3	CKB20104	Reaction Engineering	4	28	20	56	6	50	160
4	CPB21404	Separation Process	4	28	28	78	7	19	160
5	MPU34*2	Co-curriculum	2	16	6	2	6	30	60
6	CKB30103	Industrial Safety & Health	3	28	8	28	5	51	120
		TOTAL	**18**	**127**	**89**	**174**	**35**	**275**	**700**

YEAR 3: SEMESTER 5

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CPB30004	Process Dynamics & Control	4	24	4	46	6	80	160
2	CPB20203	Numerical Methods in Chemical Engineering	3	22	30	0	10	52	114
3	CPB30703	Design Project 1 (Design & Feasibility Study of Plant)	3	14	0	28	2	76	120
4	CPB20403	Plant Utilities & Maintenance	3	17	17	29	7	50	120
5	CLB21303	Process Instrumentation & Control	3	22	0	33	5	60	120
6	WBB20103	Technopreneurship	3	10	20	0	2	88	120
		TOTAL	**19**	**77**	**51**	**103**	**25**	**258**	**514**

YEAR 3: SEMESTER 6

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CPB30404	Design Project 2 (Plant & Process Optimization)	4	34	0	96	0	30	160
2	CPB30503	Petrochemical & Petroleum Refining Technology	3	26	0	32	5	57	120
3	CLB20903	Engineering Statistics	3	28	28	0	8	56	120
4	CLB30003	Oil & Fat Process Technology	3	16	10	37	5	52	120
5	CPB49804	Final Year Project 1	4	5	0	110	1	44	160
6		Elective 1	3	34	17	0	5	64	120
		TOTAL	**20**	**143**	**55**	**275**	**24**	**303**	**800**

YEAR 4: SEMESTER 7

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CPB49906	Final Year Project 2	6	5	0	205	1	29	240
2	CPB30603	QA & QC in Chemical Engineering	3	28	24	0	6	62	120
3	MPU3242	Innovation Management	2	15	30	0	5	30	80
4	CPB30103	Biochemical Engineering	3	23	0	34	5	58	120
5		Elective 2	3	28	28	0	8	56	120
6		Elective 3	3	34	17	0	4	65	120
		TOTAL	**20**	**133**	**99**	**239**	**29**	**300**	**800**

YEAR 4: SEMESTER 8

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WIB41009	Industrial Training	9	0	0	320	4	36	360
		TOTAL	**9**	**0**	**0**	**320**	**4**	**36**	**360**

*****Additional Module (Credit not included in Total Credit to Graduate –TCG)**

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU 3213	Bahasa Kebangsaan A	3	17	0	0	44	59	120
		TOTAL	**3**	**17**	**0**	**0**	**44**	**59**	**120**

140 credit

Total Credit to Graduate (TCG): 140 Credit Hours

Foreign Language*

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WMD10101	Mandarin 1	1	21	0	0	4	25	50
2	WMD10201	Mandarin 2	1	21	0	0	4	25	50
3	WAD10101	Arabic 1	1	21	0	0	4	25	50
4	WAD10201	Arabic 2	1	21	0	0	4	25	50

Electives**

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CJB40303	Management for Chemical Engineering Technologist	3	28	28	0	8	56	120
2	CJB40503	Marketing for Chemical Engineering Technologist	3	34	17	0	4	65	120
3	CJB40803	Chemical Engineering Technologist Organizational Behavior	3	34	17	0	5	64	120
4	CBB30703	Enzyme Technology	3	30	0	47	3	40	120
5	CJB40303	Phytopharmaceutical Technology	3	30	0	47	5	38	120
6	CFB31303	Hazard Analysis Critical Control Point (HACCP)	3	28	0	42	5	45	120
7	CRB40203	Rubber Engineering	3	28	0	45	9	38	120
8	CRB40503	Biopolymer	3	23	0	42	4	53	120
10	CEB30203	Environmental Impact Assessment	3	36	0	40	11	33	120
11	CEB30403	Air Pollution Control Technology	3	21	0	45	4	50	120
12	CEB30503	Wastewater Treatment Technology	3	32	0	53	3	32	120

Co-Curriculum*

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU3412	Career Guidance 2	2	17	6	2	4	51	80
2	MPU3422	Community Service 2	2	17	0	0	12	51	80
3	MPU3432	Culture 2	2	20	0	12	0	48	80
4	MPU3442	Rakan Masjid 2	2	17	0	0	8	55	80
5	MPU3452	Siswa-siswi Bomba & Penyelamat 2	2	17	0	20	0	43	80
6	MPU3462	Siswa-siswi Pertahanan Awam Malaysia 2	2	17	0	16	0	47	80
7	MPU3472	Sports Management 2	2	17	0	16	0	47	80
8	MPU3482	Personal Financial Management 2	2	17	0	18	3	42	80
9	MPU3492	Askar Wataniah	2	17	0	23	0	40	80

Note :

***Additional Module - MPU2213 Bahasa Kebangsaan A**

a. For local students without credit in B. Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).

MAJOR COURSES

BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (HONS) IN PROCESS

CPB21404 Separation Process
CPB20203 Numerical Methods in Chemical Engineering
CPB20403 Plant Utilities & Maintenance
CPB30004 Process Dynamics & Control
CPB 30303 Oil & Fat Process Technology
CPB30703 Design Project 1 (Design & Feasibility Study of Plant)
CPB30103 Biochemical Engineering
CPB30404 Design Project 2
CPB30503 Petrochemical & Petroleum Refining Technology
CPB40003 Introduction Renewable Energy
CPB30603 QA & QC in Chemical Engineering

CPB21404 Separation Process

Rationale for inclusion of the course in the program:

Separation processes are crucial in chemical engineering because almost all industrial chemical processes include operations for separating chemicals contained in the process feed(s) and/or produced in reactors within the process. This course is intended to impart the students with the basic principles and operations of separation methods, such as humidification, drying, crystallization, adsorption, and filtration.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the basic principles of humidification, drying, crystallization, adsorption and filtration operations.
2. Apply formula related to the humidification, drying, crystallization, adsorption and filtration processes.
3. Use psychometrics chart to determine the properties in air-water system.
4. Perform laboratory works related to mass transfer operation using semi-pilot rigs, describe the data results, and manipulate the parameters for each experiment.

CPB20203 Numerical Methods in Chemical Engineering

Rationale for inclusion of the course in the program:

This is an introductory course aimed at providing students with fundamental concepts of biology of cells' components which form the foundation for their study in later years. These concepts are essential as students will encounter them at higher-level courses.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply numerical methods to various types of problems in solving a system of linear equations and nonlinear equations
2. Select appropriate numerical methods to solve problems in chemical engineering using regression, interpolation and numerical differentiation of data and functions
3. Apply numerical solution algorithms to solve the ordinary differential equations
4. Apply numerical solution algorithms to solve the 1-D/2-D heat equation and 2-D wave equation

CPB20403 Plant Utilities & Maintenance

Rationale for inclusion of the course in the program:

The course is aimed at providing students with the basic knowledge in supporting equipments or facilities found in chemical processing plants and also to provide students with the framework in plant maintenance.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Differentiate Plant Utilities System and plant management in chemical processing plants.
2. Demonstrate ability to work in team either as a leader or ordinary group member.
3. Apply standard monitoring and critical analysis on typical maintenance during commissioning, plant operation and shutdown.

CPB30004 Process Dynamics & Control

Rationale for inclusion of the course in the program:

This course will impart knowledge to the students on the various aspects of fundamental process control and its applications in the chemical industries.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Develop an understanding of process dynamics and control system.
2. Distinguish the results, graph and control tuning data obtained from practical session.
3. Analyze process behaviour in various control strategies in chemical process.
4. Construct a mathematical modelling of dynamic process with selected software.

CPB30303 Oil & Fat Process Technology

Rationale for inclusion of the course in the program:

This course introduces students to the Oils and Fat Technology and practises. The course encompass source of oils, common methods of extraction, refining, modification, usage and nutritional perspective. Furthermore, Malaysia is one of the major producer of palm oil which contributes half of global oils and fats market

Learning Outcomes:

Upon completion of this course students should be able to:

1. Integrate basic chemistry and engineering courses to Oil and Fat Technology fundamental.
2. Demonstrate pilot plant experiments with relevant apparatus and standards given to produce desire products.
3. Develop potential products or modification process as entrepreneurship projects.

CPB30703 Design Project 1 (Design & Feasibility Study of Plant)

Rationale for inclusion of the course in the program:

This course is aimed at providing students with the understanding of basic principles and fundamentals in the various aspects of designing a chemical plant. It also aims at introducing the use of computer aided process design software in solving engineering problems.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply basic fundamentals and concepts in chemical engineering in developing solutions to chemical engineering design problems.
2. Perform preliminary design of a chemical processing plant.
3. Use design computational tools for employ process simulation program.
4. Effectively perform in process design team to plan and modify a design process as needed.

CPB30103 Biochemical Engineering

Rationale for inclusion of the course in the program:

This course introduces the fundamental biochemical engineering concepts primarily to chemical engineers. To accommodate those who do not have the biological background, the course will first introduce the basic ideas from microbiology, biochemistry, and biology.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyse different biochemical engineering concepts and ways of thinking.
2. Perform laboratory works related to the enzyme activity and microbial growth according to standard operating procedure and safety working procedure.
3. Evaluate biochemical engineering process and reactors in terms of analysis, design, operation and monitoring.

CPB30404 Design Project 2

Rationale for inclusion of the course in the program:

This course is aimed at providing students with the understanding of basic principles and fundamentals in the various aspects of designing a chemical plant. It also aims at introducing the use of computer aided process design software in solving engineering problems.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Perform chemical engineering design solution by applying chemical engineering principles.
2. Conduct equipment design for an industrial chemical process.
3. Demonstrate an awareness and understanding of social, safety and health, environment consideration and economic impacts in solving chemical engineering design.
4. Demonstrate the ability to work in team and communicate effectively as a leader or team members to discuss and plan the design.

CPB 30503 Petrochemical & Petroleum Refining Technology

Rationale for inclusion of the course in the program:

Petrochemical & Petroleum Refining Technology is one of the most important fields in chemical industry. This course will impart knowledge on fundamentals of petroleum refining, petrochemical technology and natural gas processing technology. The topics include theoretical and practical for Petroleum Products Testing and Natural Gas Analysis.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Compare the process involved in petroleum refining, natural gas and petrochemicals synthesis.
2. Solve the problems involve in petroleum refining, natural gas and petrochemical synthesis using data/information given.
3. Analyse properties of crude oil and petroleum products based on results obtained by crude assays, laboratory experiments and Material Safety Data Sheet (MSDS).
   Propose solutions on problems or effects related to petroleum refining, natural gas processing and petrochemical industries.

CPB 40003 Introduction Renewable Energy

Rationale for inclusion of the course in the program:

This is an introductory course aiming to provide students with a basic understanding of renewable energy technology, the current and forecasted energy requirement scenarios and the roles of renewable energies in Malaysia.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Identify the sources and importance of renewable energy
2. Recognise the processes to converted renewable energy to useful forms.
3. Discuss their opinions on issues relating the renewable energy.

CPB 30603 QA & QC in Chemical Engineering

Rationale for inclusion of the course in the program:

This course is aimed at providing students with the concept of controlling chemical process and products via quality control and statistical techniques.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the concept of statistical quality control (SQC), statistical process control (SPC) and the process capability study.
2. Construct the quality tools to solve quality problems in conducting quality improvement activities.
3. Explain the process outcome based on control charts and acceptance sampling.

BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (HONS) IN FOOD

1. **Program Structure**
2. **Major Courses**

PROGRAM STRUCTURE

- ***subject to amendments***

YEAR 1: SEMESTER 1

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLB19203	Mathematics 1	3	28	24	0	6	62	120
2	CLB40002	Engineering Technologist in Society	2	14	0	23	5	38	80
3	WEB20202	Professional English 1	2	10	16	0	5	49	80
4	MPU3123/ MPU3143	Tamadun Islam & Tamadun Asia (TITAS)/ Bahasa Melayu Komunikasi 2	3	10	0	0	46	64	120
5	CLB10903	Engineering Drawing & Computing	3	15	30	36	9	30	120
6	WEB10302	Fundamental English	2	10	16	0	4	50	80
7		Foreign Language 1	1	21	0	0	4	25	50
		TOTAL	**16**	**108**	**86**	**59**	**79**	**318**	**650**

YEAR 1: SEMESTER 2

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLB21403	Engineering Design	3	15	30	36	9	30	120
2	CLB10703	Physical Chemistry	3	17	14	37	6	46	120
3	CLB19303	Mathematics 2	3	28	24	0	6	62	120
4	MPU3113/ MPU3173	Hubungan Etnik / Pengajian Malaysia 3	3	17	0	0	25	78	120
5	CLB12004	Chemical Process Principles	4	28	14	59	7	53	161
6	CLB11003	Fluid Mechanics	3	28	0	51	5	36	120
7		Foreign Language 2	1	21	0	0	4	25	50
		TOTAL	**20**	**154**	**82**	**183**	**62**	**330**	**811**

YEAR 2: SEMESTER 3

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLB10402	Fundamental of Electric & Electronics	2	14	0	27	4	35	80
2	CLB 10803	Analytical & Organic Chemistry	3	30	0	38	7	45	120
3	CLB20403	Thermodynamics	3	17	18	37	6	42	120
4	CLB21204	Transport Process Principles	4	28	18	29	5	80	160
5	CEB20003	Introduction to Environmental Engineering Technology	3	22	0	43	9	46	120
6	MPU3333/ MPU3343	Isu-isu Kontemporari Muslim di Malaysia/Culture and Lifestyle in Malaysia	3	12	0	0	30	78	120
		TOTAL	**18**	**123**	**36**	**174**	**61**	**326**	**720**

YEAR 2: SEMESTER 4

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WEB20302	Professional English 2	2	13	13	0	2	52	80
2	CFB20002	Introduction to Food Science and Technology	2	32	0	0	7	41	80
3	CFB20603	Chemical Food Analysis	3	26	0	39	13	42	120
4	CFB20303	Food Microbiology	3	28	0	42	7	43	120
5	MPU34*2	Co-curriculum	2	16	6	2	6	30	60
6	CKB30103	Industrial Safety & Health	3	28	8	28	5	51	120
7	CFB20703	Food Chemistry	3	28	0	42	5	45	120
		TOTAL	**18**	**171**	**27**	**153**	**45**	**304**	**700**

YEAR 3: SEMESTER 5

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CFB 40403	Instrumental Food Analysis	3	27	0	44	6	43	120
2	WBB20103	Technopreneurship	3	10	20	0	2	88	120
3	CFB30104	Food Processing and Innovation	4	30	0	54	8	68	160
4	CLB21303	Process Instrumentation & Control	3	22	0	33	5	60	120
5	CFB30203	Food Packaging Technology	3	28	0	42	7	46	123
6	CFB30103	Food Sensory and Evaluation	3	28	0	42	5	45	120
		TOTAL	**19**	**145**	**20**	**215**	**33**	**350**	**763**

YEAR 3: SEMESTER 6

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WPB49804	Final Year Project 1	4	5	0	110	1	44	160
2	CFB31003	Food Quality & Safety Management System	3	47	0	6	8	59	120
3	CFB31103	Food Process Engineering	3	19	18	21	7	55	120
4	CLB20903	Engineering Statistics	3	28	28	0	8	56	120
5	CLB30003	Oil & Fat Process Technology	3	16	10	37	5	52	120
6		Elective 1	3						120
		TOTAL	**19**	**115**	**56**	**174**	**29**	**266**	**760**

YEAR 4: SEMESTER 7

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WPB49906	Final Year Project 2	6	5	0	205	1	29	240
2	CFB40104	Food Plant Design	4	36	0	45	8	71	160
3	MPU3242	Innovation Management	2	15	30	0	5	30	80
4	CFB30803	Halal Technology	3	28	0	42	7	43	120
5		Elective 2	3						120
6		Elective 3	3						120
		TOTAL	**21**	**84**	**30**	**292**	**21**	**173**	**840**

YEAR 4: SEMESTER 8

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WIB39909	Industrial Training	9	0	0	320	4	36	360
		TOTAL	**9**	**0**	**0**	**320**	**4**	**36**	**360**

*****Additional Module (Credit not included in Total Credit to Graduate –TCG)**

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU 3213	Bahasa Kebangsaan A	3	17	0	0	44	59	120
		TOTAL	**3**	**17**	**0**	**0**	**44**	**59**	**120**

TCG 140 credit

Total Credit to Graduate (TCG): 140 Credit Hours

Foreign Language*

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WMD10101	Mandarin 1	1	21	0	0	4	25	50
2	WMD10201	Mandarin 2	1	21	0	0	4	25	50
3	WAD10101	Arabic 1	1	21	0	0	4	25	50
4	WAD10201	Arabic 2	1	21	0	0	4	25	50

Electives**

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CJB40303	Management for Chemical Engineering Technologist	3	28	28	0	8	56	120
2	CJB40503	Marketing for Chemical Engineering Technologist	3	34	17	0	4	65	120
3	CJB40803	Chemical Engineering Technologist Organizational Behavior	3	34	17	0	5	64	120
4	CBB30703	Enzyme Technology	3	30	0	47	3	40	120
5	CJB40303	Phytopharmaceutical Technology	3	30	0	47	5	38	120
6	CJB30303	Hazard Analysis Critical Control Point (HACCP)	3	28	0	42	5	45	120
7	CRB40203	Rubber Engineering	3	28	0	45	9	38	120
8	CRB40503	Biopolymer	3	23	0	42	4	53	122
9	CEB30203	Environmental Impact Assessment	3	36	0	40	11	33	120
10	CEB30403	Air Pollution Control Technology	3	21	0	45	4	50	120
11	CEB30503	Wastewater Treatment Technology	3	32	0	53	3	32	120

Co-Curriculum*

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU 3412	Career Guidance 2	2	17	6	2	4	51	80
2	MPU 3422	Community Service 2	2	17	0	0	12	51	80
3	MPU 3432	Culture 2	2	20	0	12	0	48	80
4	MPU 3442	Rakan Masjid 2	2	17	0	0	8	55	80
5	MPU 3452	Siswa-siswi Bomba & Penyelamat 2	2	17	0	20	0	43	80
6	MPU 3462	Siswa-siswi Pertahanan Awam 2	2	17	0	16	0	47	80
7	MPU 3472	Sport s Management 2	2	17	0	16	0	47	80
8	MPU 3482	Personal Financial Management 2	2	17	0	18	3	42	80
9	MPU 3492	Askar Wataniah	2	17	0	23	0	40	80

Note :

***Additional Module - MPU2213 Bahasa Kebangsaan A**

a. For local students without credit in B. Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).

MAJOR COURSES

BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (HONS) IN FOOD

CFB20002 Introduction to Food Science and Technology
CFB20303 Food Microbiology
CFB20703 Food Chemistry
CFB20703 Food Chemistry
CFB40503 Instrumental Food Analysis
CFB30103 Food Sensory and Evaluation
CFB30203Food Packaging Technology
CFB30104Food Processing and Innovation
CFB20603Food Analysis 1
CFB30004 Food Processing and Preservation Technology
CFB31003 Food Quality & System Management System
CFB31103 Food Process Engineering
CFB30803 Halal Technology
CFB40104 Food Plant Design

CFB20002 Introduction To Food Science And Technology

Rationale for inclusion of the course in the program:

This course aimed to provide students the basic knowledge and understanding of food science and technology.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Discuss general principles and concepts in food science and technology.
2. Participate in class discussions on selected topics of food science and technology.
3. Collaborate with team members in planning and discussing the related issues of food science and technology.

CFB20303 Food Microbiology

Rationale for inclusion of the course in the program:

This course aimed to provide the students with understanding of the basic function, activity, classification of microorganisms, microbiological quality of food products and food safety. The student will also obtain a good understanding of laboratory practices in food microbiology.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Examine and explain the theories and concepts of microorganisms in relationship with the factors that influence microbial growth, microorganisms in foods, food spoilage and food borne diseases.
2. Observe, predict, conduct, interpret and analyzed results of analysis in food microbiology.
3. Collaborate with team members in planning and performing a scientific inquiry.

CFB20703 Food Chemistry

Rationale for inclusion of the course in the program:

This course aimed to provide students with the knowledge of food and biochemistry with emphasis on the structure, properties and functions of water, carbohydrates, lipids, proteins, enzymes, vitamins, mineral, pigments and other food additives as well as regulatory control.

Learning Outcomes:

Upon completion of this course students should be able to:

Upon completion of the course, students should be able to:

1. Discuss the structure, properties and functions of major food constituents such as water, food macromolecules, vitamins, mineral, pigments and other food additives.
2. Perform laboratory experiment related to food chemistry and biochemistry.
3. Organize problem given in a form of mini project leading to plausible solution.
4. Organize with team members in performing and reporting a scientific project and experimental report.

CFB40503 Instrumental Food Analysis

Rationale for inclusion of the course in the program:

This course aimed to provide students the knowledge in modern laboratory management system, theory and application of instrumentation in testing of food materials.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply the principles and procedures for the laboratory management and instrumental analysis of food
2. Apply knowledge from this course when execute the actual analysis of food samples in the laboratory
3. Collaborate with team members in planning, performing and reporting a scientific inquiry/assignment related to instrumental analysis of food.

CFB30103 Food Sensory and Evaluation

Rationale for inclusion of the course in the program:

To provide students with the basic principles and requirements of sensory evaluation of food.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the foundations of sensory function, threshold determination, colour and texture in evaluation of food.
2. Observe, conduct and discuss the appropriate techniques and methods that match the requirements of a sensory task including the use of sensory in marketing research.
3. Display the results of experiment by using appropriate statistical methods to guide product development and assure quality of food.
4. Discuss (in depth) with team members in planning and performing sensory test as a project.

CFB30104 Food Processing and Innovation

Rationale for inclusion of the course in the program:

To impart knowledge and technical skills in processing of various food products and to incorporate the technologies especially in development of new food products and simulated current test markets.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the knowledge of principle of food processing techniques applied at low, ambient or high temperature and the effect of processing techniques towards food products/ingredients that important in developing new product.
2. Demonstrate the working principle of food processing equipment/machinery and the ability of handling and troubleshooting of the equipment/machinery.
3. Demonstrate with team members in planning, performing and reporting a scientific inquiry, practical and mini project in developing new food products.
4. Create the awareness of entrepreneurial resources and sustainability in develop a new food product.

CFB31003 Food Quality & Safety Management System

Rationale for inclusion of the course in the program:

To provide students with knowledge of quality assurance and quality control, requirement, implementation and audit in food industries as well as quality management system that commonly applied in food industries and provide students with the principles of food safety in food manufacturing as well as food legislations and standards.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the importance of quality assurance and quality control in manufacturing of food products.
2. Relate international and national food law, food quality & hygiene standards and practices to the production of safe food products.
3. Demonstrate among team members the ability for self-directed learning and reflective practice in the work place through development of a model HACCP plan for a food industry.

CFB31103 Food Process Engineering

Rationale for inclusion of the course in the program:

To provide knowledge on the application of fluid mechanics, thermodynamics, heat and mass transfer, and chemical process principles to food processes. It incorporates the latest technologies and advances in a cohesive overview of all aspects of food process engineering and design of simple operations.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Evaluate the basic principles in food engineering processes such as heating, cooling, concentration, drying and etc. through given case studies or situation
2. Demonstrate the working principle of food processing engineering equipment/machinery and the ability of handling and troubleshooting of the equipment/machinery
3. Collaborate with team members in interpreting practical engineering problems associated with food process operations.
4. Perform an investigation of food processing engineering problems using data from relevant sources.

CFB30803 Halal Technology

Rationale for inclusion of the course in the program:

To provide students good understanding of Halal concept, implementation and monitoring by government agency, halal and current quality system and its integration. Exposed students with in-depth understanding to conduct analysis of certain non halal component in food.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Outline halal guidelines and its implementation according to Islamic law for food industry.
2. Perform analysis for the determination of non-halal substances with team members.
3. Discuss the current issues regarding halal as a system and practices in the food industry.

CFB40104 Food Plant Design

Rationale for inclusion of the course in the program:

To combine all experiences as an engineering technologist into a more coherent package and develop understanding of the engineering design process and the food industry. Sanitary principles will be introduced in the design process.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the fundamentals engineering economics (i.e. time value of money, cash flow, return of investment), drafting and project budgeting.
2. Explain integrating design solutions for selection of food process operations and alternatives for a food processing plant.
3. Practice of ethical consequences in design aspect and ethical behaviour in line with professional code of conduct requirement.
4. Prepare a feasibility study or business plan on the food plant project.
5. Display the technical model for the selected food plant design professionally.

ELECTIVE COURSES

CSB31103 Oil Palm Biomass Products
CJB30003 Palm Oil Technology 1
CJB40003 Palm Oil Technology 2
CJB30403 Product Formulation & Dosage Form
CJB30503 Product Development Process
CJB40203 Validation & Regulation of Pharmaceutical Product
CJB40303 Phytopharmaceutical Technology
CBB20503 Principles of Bioprocess Technology
CBB30303 Biomolecular Techniques
CBB30703 Enzyme Technology
CEB 31003 Environmental Microbiology
CFB31303 Hazard Analysis Critical Control Point

CEB31503 Environmental Toxicology and Public Health
CEB30203 Environmental Impact Assessment
CEB40603 Introduction to Renewable Energy

CJB40403 Management for Chemical Engineering Technologist
CJB40503 Marketing for Chemical Engineering Technologist
CJB40803 Chemical Engineering Technologist Organizational Behaviour

CRB40203 Rubber Engineering
CRB40503 Bio-Polymer

CSB31103 Oil Palm Biomass Products

Rationale for inclusion of the course in the program:

Provide students with knowledge and hands on skill in utilization of oil palm biomass to produce value added products such as biofuels and biobased chemicals by using thermochemical and biological conversion technologies.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Discuss the types of oil palm biomass, logistics and the processing technologies involved in the production of products.
2. Appraise various methods of oil palm biomass utilization for the production of value-added products.
3. Relate the overall oil palm biomass exploitation with sustainable development.

CJB30003 Palm Oil Technology 1

Rationale for inclusion of the course in the program:

To impart knowledge on the oil palm upstream activities consists of crop production, crude palm oil and palm kernel production.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Discuss the upstream processing technology in palm oil industry from nursery, plantations and palm oil mills.
2. Execute experimental activities associate with palm oil technology with correct techniques.
3. Develop potential products or modification process as entrepreneurship projects.

CJB 40003 Palm Oil Technology 2

Rationale for inclusion of the course in the program:

To impart knowledge on the palm oil refinery processes consists of properties of edible oils, common methods of extraction, refining, modification, usage and nutritional perspective. Furthermore, Malaysia is one of the major producer of palm oil which contributes half of global oils and fats market.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Discuss the properties of palm oil and its derivatives and refinery processing technology.
2. Execute experimental activities associate with refinery process of palm oil with correct techniques
3. Relate the overall oil palm industries with the need of sustainable development.

CJB30403 Product Formulation & Dosage Form

Rationale for inclusion of the course in the program:

This course will provide students with knowledge and hands on skill in formulating and designing different dosage forms of phytopharmaceutical products.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Decide the suitable product formulation and dosage forms based on physicochemical characteristics and biopharmaceutical information of the drug compound
2. Identify the product formulation and dosage forms that meets the requirements by the society
3. Perform the analytical and experimental skills to come out with the appropriate formulation and dosage forms

CJB 30503 Product Development Process

Rationale for inclusion of the course in the program:

This course will provide students with knowledge and hands on skill in developing and producing of phytopharmaceutical products.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Discuss the product development process, its quality and stability attributes and relevant standards and regulations.
2. Conduct experiment related to pharmaceutical product development and its relevant analysis.
3. Formulate new product development of high value herbal product.

CJB 40203 Validation & Regulation of Pharmaceutical Product

Rationale for inclusion of the course in the program:

This course will provide students with knowledge and hands on skill in preparing protocols and validating of pharmaceutical process.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Evaluate the validation process and compliance with regulations to decide the validity of pharmaceutical manufacturing process.
2. Performs the analysis for validation and compliance of the manufacturing process with regulations.
3. Prepare relevant documents to support validation and inspection process.

CJB40303 Phytopharmaceutical Technology

Rationale for inclusion of the course in the program:

The rationale is to impart knowledge on various types and form of phytopharmaceutical including product processing and quality control.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Design production line consisting of processing steps of phytopharmaceutical product and its quality assurance determination.
2. Perform selected product processing of phytopharmaceuticals including operating machineries involved in phytopharmaceuticals production.
3. Demonstrate the accomodation of knowledge and skill of phytopharmaceutical technology in solving certain industrial demand.

CBB20503 Principles of Bioprocess Technology

Rationale for inclusion of the course in the program:

This course will provide students with knowledge and hands on skill in bioprocess technology in order to exploit microbial, plant and animal cell systems as products of valuable commodities.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the principles of bioprocess engineering technology.
2. Demonstrate ability to work in team either as a leader or ordinary member.
3. Execute experimental activities associate with bioprocess engineering technology.
4. Perform purification process with appropriate equipment and techniques.

CBB30303 Biomolecular Techniques

Rationale for inclusion of the course in the program:

This is an intermediate level course aimed at providing and emphasis on cell and molecular biology concepts. These concepts are essential since the students will encounter these at higher level. This is to produce capable graduates equipped with both knowledge and skills in molecular biology.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Infer the fundamental and advance knowledge in biomolecular techniques.
2. Perform biomolecular techniques and methodologies based on the theory learned.
3. Demonstrate competency in presenting information in verbal and written forms which encompasses a critical analysis of findings (CTPS).
   .

CBB30703 Enzyme Technology

Rationale for inclusion of the course in the program:

This course will provide relevant principle or theory of enzymology and techniques use in enzyme application.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Develop an understanding of enzyme fundamentals and attribute these knowledge in the applications of enzymes.
2. Conduct the experimental work on enzymatic activity assay, enzyme production and purification as well as carry out immobilization of an enzyme.
3. Discuss the applications of enzyme technology towards production high value products.

CEB31003 Environmental Microbiology

Rationale for inclusion of the course in the program:

This course will provide an overview of the important microbes involved in environmental microbiology including the detection and monitoring approach.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Interpret the principles and characteristics on microorganisms in environment.
2. Perform the methods used in screening and identification of environmental microorganisms.
3. Demonstrate understanding on the impact of environmental microbiology towards sustainable development.

CFB31303 Hazard Analysis Critical Control Point

Rationale for inclusion of the course in the program:

This course will provide students with knowledge and application of Good Manufacturing Practice (GMP) and the implementation of Hazard Analysis Critical Control Point (HACCP) in Food Industry including quality assurance and quality control, requirement, implementation, and audit in food industries as well as quality management system that commonly applied in food industries.

Learning Outcomes:

Upon completion of the course, students should be able to:

1. Produced HACCP manuals based on the principles, methodologies, techniques and tools of MS 1480:2007 (HACCP) (C6)
2. Perform internal audit for GMP and HACCP in premise (P4).
3. Display among team members the ability for self-directed learning and reflective practice in the work place through the development of a model HACCP plan for food industry (A5)

CEB31503 Environmental Toxicology and Public Health

Rationale for inclusion of the course in the program:

The goals of this course is to develop an understanding of toxicological principles and their application to both human and ecological risk assessment as they pertain to environmental cleanup. The principle and methodologies for risk assessment will be presented within the context of state and federal environmental regulation.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Develop the concepts and components of toxicology and types of environmental risk and analysis.
2. Relate the concept and components of toxicology and risk assessment to real-life example.
3. Demonstrate the ability to work in a team.

CEB30203 Environmental Impact Assessment

Rationale for inclusion of the course in the program:

To provide students with the knowledge of the current practices and policies pertaining to the development, implementation and maintenance of environmental management system (EMS) in an organization. ISO standards will be examined and case studies will be used to highlight the key factors involved with EMS implementation. The process of assessing environmental impacts and aspects and implementing continuous improvement measured will be addressed. Comparable Environmental Quality Act (EQA) 1974 will be examined to reinforce management system concepts.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyze the concept, application and legislation of environmental impact assessment
2. Perform an environmental impact assessment report in accordance to the standard requirement
3. Measure the environmental impacts due to differing types of development projects
4. Analyze and make decision with problem regarding on environmental impact.

CEB40603 Introduction to Renewable Energy

Rationale for inclusion of the course in the program:

This is an introductory course aiming to provide students with a basic understanding of renewable energy technology, the current and forecasted energy requirement scenarios and the roles of renewable energies in Malaysia.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyse the sources of renewable energy and the means by which the sources can be exploited for energy generation.
2. Demonstrate the ability to work in team and communicate effectively.
3. Deliver their opinions on issues relating the renewable energy based on oral or written.

CJB40403 Management for Chemical Engineering Technologist

Rationale for inclusion of the course in the program:

This course is aimed at providing students with the knowledge for the student to use in workplace. Management is the process of managing several related projects, often with the intention of improving an organization's performance. In practice and in its aims it is often closely related to systems engineering. In today's global and fast paced business environment, success on complex projects cannot be guaranteed by technical competence alone. These environments require reality based project management skills and expertise. Budget constrained, schedule critical chemical engineering projects, often executed by virtual teams operating from different parts of the world, require team based project planning to guarantee success.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the basic management functions and process, as well as the management terms and concepts.
2. Discuss the managerial decision process globally and culturally.
3. Justify the interactions among communications and management practice.
4. Practise the applications of management in the workplace of chemical engineering technology and society.

CJB40503 Marketing for Chemical Engineering Technologist

Rationale for inclusion of the course in the program:

This is an introductory course in marketing for chemical engineers which covers the basic principles of marketing. This course provides knowledge for the student to examine the role and practice of marketing.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the social functions of marketing, market role in product design and consumers' decision.
2. Compare the difference between sales and market orientation and their importance for marketing performance.
3. Analyze the need market segmentation, market targeting, market positioning, product distribution through various channels.
4. Recognize pricing strategies and best practice in promotion strategies.

CJB40803 Chemical Engineering Technologist Organizational Behaviour

Rationale for inclusion of the course in the program:

This course serves as an introduction to the field of organizational behaviour. It is designed to expose students to the fundamental principles with which to understand human behaviour inside public organizations. The course examines various theories developed in an attempt to explain and predict employee behaviour in an organizational context.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Demonstrate the knowledge of behavioural aspects in management, concept of an organization's corporate culture and its effects on the behavior of individuals and groups in organizations.
2. Demonstrate the abilities to develop reasonable solutions to organizational behavior problems using appropriate facts, concepts, principles, analytic techniques, and theories from this organizational behavior course.
3. Demonstrate the understanding of relation between behavioural aspects in management towards management, business practices and technopreneurial competencies.

CRB40203 Rubber Engineering

Rationale for inclusion of the course in the program:

This course aimed to provide students information of rubber applications; included the mathematical concept in rubber engineering. Force deformation and dynamic mechanical behaviour of rubbers will also be covered.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Calculate rubber performance using suitable mathematical equations
2. Summarize bulk properties, effect of shape factor, lamination, static and dynamic force deformations of rubber
3. Correlate applications of rubber to its bulk properties and force deformation
4. Demonstrate ability to work in a team in completing assignment in the area of rubber engineering.

CRB 40503 Bio-polymer

Rationale for inclusion of the course in the program:

This course is aimed at introducing students to the advantages and applications of biopolymer in the bio system industry. An advanced introduction to the importance of bio based plastics in pharmaceutical and biomedical application will be imparted during the course.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Appraise between polymeric, bio-polymeric materials and the functions of additives in products.
2. Summarize the functions of bio-polymer materials in pharmaceutical and biomedical applications.
3. Organize suitable preparation of various laboratory works in safely manner.
4. Work effectively as individuals and team member.

Who to See For Advice

	ISSUES	WHO TO SEE
1.	Could not adapt with the teaching style of a lecturer	Lecturer concern / Head of Section
2.	Concern about labs, workshops, classrooms (safety, comfort, lack of equipment, lack of components, lack of practical, etc)	Lecturer concern / Head of Section
3.	Non-academic related problems that may affect academic achievement such as financial, family, social, emotional, spiritual, cannot get along with colleagues, cannot focus on study in the hostel due to environment, etc	Academic Advisor/Counsellor
4.	Weak in certain subjects, pre-requisites	Lecturer concern / Academic Advisor
5.	Academic related problems (study plan, add subject, drop subject, quit, etc)	Academic Advisor