



**UNIVERSITI
KUALA LUMPUR**

**Malaysian Institute of Chemical &
Bioengineering Technology**

**Programme Handbook
July 2020 Intake**

Disclaimer:

*The Programme Handbook Diploma July 2020 Intake
is meant for the students for Diploma July 2020 Intake.*

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Vision & Mission of University

CORPORATE STRATEGY



VISION

TO BE THE LEADING ENTREPRENEURIAL TECHNICAL UNIVERSITY






MISSION

TO PRODUCE ENTERPRISING GLOBAL TECHNOPRENEURS

Academic Activities Calendar 2020

SEMESTER REGISTRATION AND STUDENT STATUS		
DESCRIPTION	JANUARY SEMESTER	JULY SEMESTER
Semester Registration for Returning Students	Week 0 - 1	Week 0 - 1
Online Semester Registration is CLOSED		
Late Semester Registration	Week 1	Week 1
Appeal to Reactivate Student Status	Week 4	Week 4
Deferment from Study After Week 5 – Pay full Tuition Fees & subjects will recorded as 'W'	Week 1 – 9	Week 1 – 9
SUBJECT REGISTRATION/ ADD/ DROP/WITHDRAWAL		
Add Subject (ONLINE - ECITIE)	Week 0 – 1	Week 0 – 1
Drop Subject (ONLINE- ECITIE)	Week 1 – 4	Week 1 – 4
Verifying Subject Registration (ONLINE - ECITIE)	Week 3 – 4	- Week 3 – 4
Correction of records only on: a) Wrong Subject Code b) Change Subject Group	Week 2 – 4	- Week 2 – 4
After Week 4 – Penalized at minimum RM50 for each request.	Week 5 – 9 9 March – 3 May 2020	Week 5 – 9 17 Aug – 27 Sept 2020
After Week 9 - Penalized at minimum RM100 for each request.	Week 10 onwards	Week 10 onwards
Subject Withdrawal (MANUAL - FORM)	Week 5 – 9	Week 5 – 9
Subject Pre-Registration ONLINE – ECITIE	Week 11 – 12	Week 11 – 12
FINAL EXAMINATION		
Draft of Final Examination Timetable released	Week 10	Week 10
Final Examination Timetable released	Week 12	Week 12
BAR List released	Week 17	Week 17
FINAL EXAMINATION	18 JUNE – 1 JULY	30 NOV – 13 DEC

Academic Top Management Team UniKL MICET

	<p>Associate Professor Ts. Dr Ruzainah binti Ali@Jaafar Dean of UniKL MICET Email: ruzainah@unikl.edu.my Phone: 06-551 2146</p>
	<p>Dr Rapidah binti Othman Deputy Dean Academic and Technology Email: rapidah@unikl.edu.my Phone: 06-551 2016</p>
	<p>Mr Syed Azhar bin Syed Ab Rahman Deputy Dean Student Development & Campus Lifestyle Email: syedazhar@unikl.edu.my Phone: 06-551 2136</p>
	<p>Dr Raja Nazrul Hakim bin Raja Nazri Deputy Dean IIIP Email: rajanazrul@unikl.edu.my Phone: 06-551 2077</p>

Academic Staff Member of UniKL MICET

Academic Staff Member of UniKL MICET

TECHNICAL FOUNDATION SECTION

SL: STUDY LEAVE

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

PROCESS ENGINEERING TECHNOLOGY SECTION

NO.	NAME	HIGHEST QUALIFICATION	SL: STUDY LEAVE
			DESIGNATION
1.	MOHD. RAZEALY BIN ANUAR (Head of Section)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
2.	AHMAD AZAHARI BIN HAMZAH (Dr)	PhD (ELECTRICAL ENGINEERING)	SENIOR LECTURER
3.	AIZA SYUHANIZ BINTI SALLEH	MASTER OF ENGINEERING	LECTURER
4.	ALIFF RADZUAN BIN MOHAMAD RADZI (Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
5.	AMIN SAFWAN BIN ALIKASTURI (Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
6.	AZRIN BIN ABDUL RAHMAN	MASTER OF SCIENCE (PROCESS PLANT MANAGEMENT)	SENIOR LECTURER
7.	AZYYATI BINTI JOHARI	MASTER OF CHEMICAL ENGINEERING WITH ENTERPRENEUR	LECTURER
8.	FARIDAH BINTI GHAFAR (SL)	MASTER OF SCIENCE	SENIOR LECTURER
9.	ASSOC. PROF. Dr INDOK NURUL HASYIMAH BINTI MOHD AMIN	PhD (CHEMICAL ENGINEERING & PROCESS)	ASSOCIATE PROFESSOR
10.	ASSOC. PROF. Dr KELLY YONG TAU LEN	PhD (MECHANICAL SCIENCE & ENGINEERING)	ASSOCIATE PROFESSOR
11.	LAW JENG YIH (Dr)	PhD (CHEMICAL ENGINEERING)	LECTURER
12.	MARMY ROSHAIDAH BINTI MOHD SALLEH	MASTER OF ENGINEERING	LECTURER
13.	NADIA BINTI ISA (SL)	MASTER OF SCIENCE	LECTURER
14.	NAJUA DELAILA BINTI TUMIN	MASTER OF ENGINEERING(POLYMER)	SENIOR LECTURER
15.	NAZERAH BINTI AHMAD	MASTER OF ENGINEERING	LECTURER
16.	NOR AFIFAH BINTI KHALIL (Ts.)	MASTER IN ENG. TECH. (CHEMICAL ENGINEERING)	LECTURER
17.	NOR AINI BINTI BUROK (Ts.)	MASTER OF INDUSTRIAL SAFETY MANAGEMENT	SENIOR LECTURER
18.	NOR SHAHIRAH BINTI MOHD NASIR (Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
19.	NORULAKMAL BINTI NOR HADI	MASTER OF SCIENCE	SENIOR LECTURER
20.	RABIATUL ADAWIAH BINTI MAT NOOR (SL)	MASTER OF SCIENCE	LECTURER
21.	SYAHIDI FADZLI BIN ALFAN	MASTER OF SCIENCE (INDUSTRIAL & TECHNOLOGY MANAGEMENT)	LECTURER

22.	SYED AZHAR BIN SYED AB RAHMAN	MASTER OF SCIENCE (CHEMICAL ENGINEERING)	SENIOR LECTURER
23.	WAN NOOR AIDAWATI BINTI WAN NADHARI (Dr.)	PhD (BIORESOURCE, PAPER AND COATINGS TECHNOLOGY)	SENIOR LECTURER
24.	ZAINAL ABIDIN BIN MOHD YUSOF (Ts.)	MASTER OF SCIENCE	SENIOR LECTURER
25.	ZULHAFIZ BIN TAJUDIN (Ts. Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
26.	ZURAIDAH BINTI RASEP (SL)	MASTER OF ENGINEERING	LECTURER

BIOENGINEERING TECHNOLOGY SECTION

NO.	NAME	HIGHEST QUALIFICATION	SL: STUDY LEAVE
			DESIGNATION
1.	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	MASTER OF ENGINEERING	LECTURER
4.	PROF. DR MOHD AZIZAN BIN MOHD NOOR	PhD (BIOCHEMISTRY)	PROFESSOR
5.	MUHAMAD YUSUF BIN HASAN (Ts.)	MASTER OF SCIENCE (PROCESS PLANT MANAGEMENT)	SENIOR LECTURER
6.	MUHAMMAD SHARIR BIN ABDUL RAHMAN	MASTER OF CHEMICAL ENGINEERING	LECTURER
7.	NIK IDA MARDIANA BINTI NIK PA	MASTER OF SCIENCE	LECTURER
8.	NORHANI BINTI JUSOH (SL)	MASTER OF ENGINEERING	SENIOR LECTURER
9.	NURDIYANA BINTI HUSIN	MASTER OF SCIENCE	LECTURER
10.	NURUL FAEZAWATY BINTI JAMALUDIN (Ts.)	MASTER OF SCIENCE	SENIOR LECTURER
11.	ROZYANTI BINTI MOHAMAD (Ts. Dr)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
12.	ASSOC. PROF. DR RUZAINAH BINTI ALI @JAAFAR	PhD (BIOTECHNOLOGY)	ASSOCIATE PROFESSOR
13.	SHARIFAH SOPLAH BINTI SYED ABDULLAH (Ts DR)	PhD (ENVIRONMENTAL ENGINEERING)	SENIOR LECTURER
14.	SHARIFAH MARIAM BINTI SAYED HITAM (Ts. Dr.)	PhD (BIOPROCESS ENGINEERING)	SENIOR LECTURER
15.	TONG WOEI YENN (Dr.)	PhD IN MICROBIOLOGY	SENIOR LECTURER
16.	ZAINATUL 'ASYIQIN BINTI SAMSU (Ts. Dr)	MASTER OF SCIENCE	LECTURER

ENVIRONMENT AND POLYMER ENGINEERING TECHNOLOGY SECTION

SL: STUDY LEAVE

NO.	NAME	HIGHEST QUALIFICATION	DESIGNATION
1.	Ts. Dr NORILHAMIAH BINTI YAHYA (Head of Section)	PhD (FUEL CELL ENGINEERING)	SENIOR LECTURER
2.	AMELIA BINTI MD SOM (Dr)	PhD (GEOENVIRONMENT ENGINEERING)	SENIOR LECTURER
3.	AHMAD NAIM BIN AHMAD YAHAYA (Assoc. Prof. Ts. Dr.)	PhD (ENVIRONMENT ENGINEERING TECHNOLOGY)	ASSOCIATE PROFESSOR
4.	ELMY NAHIDA BINTI OTHMAN (Ts.)	INTERNATIONAL MASTER OF SCIENCE (RURAL DEVELOPMENT) (Erasmus Mundus Programme)	SENIOR LECTURER
5.	KHAIRUL NADIAH BINTI IBRAHIM	MASTER OF TECHNOLOGY	SENIOR LECTURER
6.	MOHD SYAZWAN BIN MOHD GHAZALI	MASTER OF SCIENCE	LECTURER
7.	NADIA BINTI RAZALI (Dr.)	PhD (CONSTRUCTION)	SENIOR LECTURER
8.	NOR ZALINA BINTI KASIM (Dr.)	PhD (CIVIL ENGINEERING)	SENIOR LECTURER
9.	NORHAYATI BINTI MOHD IDRUS	MASTER OF SCIENCE	LECTURER
10.	ROBERT THOMAS BACHMANN (Prof. Dr.)	PhD (ENVIRONMENTAL ENGINEERING TECHNOLOGY)	PROFESSOR
11.	SABRINA BINTI KARIM (Ts. Dr.)	PhD (CIVIL & ENVIRONMENTAL ENGINEERING)	SENIOR LECTURER
12.	SITI NOORAIN BINTI ROSLAN (Dr)	DOCTOR OF ENGINEERING (CIVIL & ENVIRONMENTAL ENGINEERING)	SENIOR LECTURER
13.	TENGGU FAZLI BIN TG JAYA @ TG YAHYA	MASTER OF ENGINEERING	SENIOR LECTURER
14.	AZANAM SHAH BIN HASHIM (Prof. Dato' Dr.)	DOCTOR OF ENGINEERING (MATERIAL SCIENCE)	PROFESSOR
15.	FAHMI ASYADI BIN MD YUSOF (SL)	MASTER OF ENGINEERING	SENIOR LECTURER
16.	MAZLINA BINTI GHAZALI (Ts.)	BACHELOR OF ENGINEERING (HONS) IN POLYMER ENGINEERING	ASST. LECTURER
17.	MOHD EDYAZUAN BIN AZNI (SL)	MASTER OF ENG. TECH. (GREEN & ENERGY EFFICIENT BUILDINGS)	LECTURER
18.	MUAZZIN BIN MUPIT (SL)	MASTER OF SCIENCE	SENIOR LECTURER
19.	MUZAFAR BIN ZULKIFLI (Ts. Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
20.	NOOR FAIZAH BINTI CHE HARUN (Dr)	DOCTOR OF ENGINEERING (ENVIRONMENTAL CHEMISTRY & ENGINEERING)	SENIOR LECTURER
21.	NOR NADIAH BINTI MOHAMAD YUSOF (Dr)	PhD (ENERGY & ENVIRONMENT SCIENCE)	SENIOR LECTURER
22.	ONG SIEW KOOL (Assoc. Prof. Ts. Dr.)	PhD (POLYMER TECHNOLOGY)	ASSOCIATE PROFESSOR

23.	RAJA NAZRUL HAKIM BIN RAJA NAZRI (Dr)	PhD (MATERIAL & METALLURGICAL ENGINEERING)	SENIOR LECTURER
24.	SUHAINI BINTI MAMAT	MASTER OF ENGINEERING	LECTURER
25.	YUSRIAH BINTI LAZIM (Dr.)	PhD IN MATERIAL SCIENCE AND ENG.	SENIOR LECTURER
26.	ZAIHAR BIN YAACOB	MASTER OF ENGINEERING	SENIOR LECTURER

FOOD ENGINEERING TECHNOLOGY SECTION

NO.	NAME	HIGHEST QUALIFICATION	SL: STUDY LEAVE
			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.	FARAH SALINA BINTI HUSSIN	MASTER OF SCIENCE (FOOD TECHNOLOGY)	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.	LILY SUHAILA BINTI YACOB	MASTER OF ENVIRONMENT (ENVIRONMENTAL SCIENCE)	LECTURER
7.	MASNIZA BINTI MOHAMED @ MAHMOOD	MASTER OF SCIENCE	SENIOR LECTURER
8.	MAZIDAH ABDUL RAHMAN (Ts. Dr.)	PhD (SCIENCE FOOD TECHNOLOGY)	SENIOR LECTURER
9.	NOR RAIHANA BINTI MOHAMED ZAM (Dr.)	PhD (NUTRITION)	SENIOR LECTURER
10.	NOR ZANARIAH BINTI SAFIEI (Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
11.	NORIZA BINTI AHMAD (Ts. Dr)	PhD (FOOD SCIENCE & TECHNOLOGY)	SENIOR LECTURER
12.	NORZAHIR SAPAWE (Assoc. Prof. Dr)	PhD (CHEMICAL ENGINEERING)	ASSOCIATE PROFESSOR
13.	NUR AQILAH BINTI HAMIM (Ts.) (SL)	BACHELOR OF PLANT BIOTECHNOLOGY	SPECIALIST
14.	RINANI SHIMA BINTI ABD. RASHID (SL)	MASTER OF SCIENCE (FOOD TECHNOLOGY)	SENIOR LECTURER
15.	SHAHRULZAMAN BIN SHAHARUDDIN (Dr.)	PHISOLOPHY DOCTORATE OF BIOPROCESS ENG.	SENIOR LECTURER

CHEMICAL ENGINEERING SECTION

NO.	NAME	HIGHEST QUALIFICATION	SL: STUDY LEAVE
			DESIGNATION
1.	WONG CHEE SIEN (Dr.) (Head of Section)	PhD (BIOPROCESS ENGINEERING)	SENIOR LECTURER
2.	CHIN LIP HAN (Dr.)	PhD (CHEMICAL ENGINEERING)	SENIOR LECTURER
3.	CHONG YUAN FOONG (IR.)	BACHELOR	SPECIALIST
4.	FARRA WAHIDA BINTI SHAARANI	MASTER OF SCIENCE	SENIOR LECTURER
5.	NOOR AINA BINTI MOHD NAZRI (Dr.)	PhD IN ENGINEERING (GAS)	SENIOR LECTURER
6.	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 (Dr)	PhD (BIOPROCESSING ENGINEERING)	SENIOR LECTURER

STUDENT DEVELOPMENT SECTION

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

IIIP SECTION

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- 1) Knowledgeable, competent, and innovative;
- 2) Effective leaders with teamwork, skills as well as verbal and non-verbal interpersonal communications skill;
- 3) Committed towards the importance of lifelong learning and continuous improvements;
- 4) Professional, ethical, and socially responsible; and
- 5) Capable of embarking on business and technopreneurial activities.

PROGRAMME LEARNING OUTCOMES (PLO)

PLO 1	Apply the knowledge of mathematics, science and chemical engineering technology fundamentals and specialization principles to well defined practical procedures and practices.
PLO 2	Conduct investigations of well-defined problems.
PLO 3	Apply and utilize appropriate techniques, resources and engineering tools to well defined engineering activities, with an awareness of their limitations.
PLO 4	Analyze well defined chemical engineering technology problems and area of specialization.
PLO 5	Formulate solutions to well defined technical problems
PLO 6	Assist in the formulation of systems, components or processes to meet specified needs.
PLO 7	Communicate effectively with the engineering community and society at large.
PLO 8	Demonstrate an awareness of and consideration for societal, health, safety, legal and cultural issues and their consequent responsibilities.
PLO 9	Demonstrate an understanding of the impact of engineering practices, taking into account the need for sustainable development.
PLO 10	Function effectively as an individual and as a member or leader in diverse technical teams.
PLO 11	Demonstrate an understanding of professional ethics, responsibilities and norms of chemical engineering technology practices.
PLO 12	Recognize the requirements for the need of professional development and to engage in independent and lifelong learning.
PLO 13	Demonstrate an awareness of management, business practices and entrepreneurial competencies.

TYPES OF COURSES

- 1. NATIONAL REQUIREMENT**
- 2. UNIVERSITY REQUIREMENT**
- 3. COMMON CORE**
- 4. DISCIPLINE CORE**

NATIONAL REQUIREMENT

MPU2313 AMALAN ISLAM DI MALAYSIA
MPU2323 RELIGIOUS PRACTICES IN MALAYSIA
MPU2213 BAHASA KEBANGSAAN (A)
MPU2232 INTERPERSONAL SKILLS
MPU 2133 BAHASA MELAYU KOMUNIKASI 1
MPU 2163 PENGAJIAN MALAYSIA 2
MPU2412 CAREER GUIDANCE 1
MPU2422 COMMUNITY SERVICE1
MPU2432 CULTURE 1
MPU2442 RAKAN MASJID 1
MPU2452 SISWA-SISWI BOMBA DAN PENYELAMAT 1
MPU2462 SISWA-SISWI PERTAHANAN AWAM 1
MPU2472 SPORTS MANAGEMENT 1
MPU2482 PERSONAL FINANCIAL MANAGEMENT 1

MPU2313 AMALAN ISLAM DI MALAYSIA

Kursus ini membincangkan aspek-aspek amalan islam yang diaplikasikan di Malaysia. Perbincangan ini meliputi konsep manusia dan agama, asas-asas Islam dan sejarah kedatangan agama Islam di Malaysia serta menerangkan keistimewaan Islam melalui institusi pendidikan, kekeluargaan, ekonomi dan pentadbiran di Malaysia. Disamping itu, perbincangan juga dilengkapi dengan isu-isu semasa dalam masyarakat berlandaskan ajaran Islam

Learning Outcomes:

Setelah tamat kursus ini, pelajar akan dapat:

1. Menghuraikan konsep manusia dan agama, asas-asas Islam dan sejarah kedatangan agama Islam di Malaysia.
2. Menguasai ibadat solat dengan betul, menghafal doa-doa selepas solat dan menghafal ayat-ayat al-Quran yang ditetapkan
3. Menerangkan keistimewaan Islam melalui institusi pendidikan, kekeluargaan, ekonomi dan pentadbiran di Malaysia
4. Menjelaskan isu-isu semasa dalam masyarakat berlandaskan ajaran Islam

References:

1. Azis Jakfar Soraji. (2012). **Pengajian Islam**. Shah Alam, Oxford Fajar.
2. Nasrudin Yunos et.al (2007). **Pengajian Islam**. Shah Alam, Oxford Fajar.
3. Paizah Ismail, (2008) *Hudud: Hukum dan Pelaksanaan*. Shah Alam: Karya Bestari.

MPU2323 RELIGIOUS PRACTICES IN MALAYSIA

This course enables students to understand their roles in developing the nation by exposing them to the influence of religions on the lives of Malaysians. Students should also be able to understand their roles as members of the society according to the constitutions of Malaysia.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the concept of man and religion
2. Describe the practices of religion as stated in Malaysian constitution
3. Explain current issues related to various religions practiced in Malaysia.

References:

1. Saw Swee-Hock (2015). *The Population of Malaysia (Second Edition)*, ISEAS Publishing, Singapore.
2. Mohd. Azizuddin Mohd Sani (2014), *Politics of Religious Expression in Malaysia*. ISEAS Publishing, Singapore.
3. Gerhard Hoffstaedter (2011), *Modern Muslim Identities: Negotiating Religion and Ethnicity in Malaysia*. NIAS Press.

MPU2213 BAHASA KEBANGSAAN (A)

Kursus ini menawarkan kemahiran berbahasa dari aspek mendengar, bertutur, membaca dan menulis sesuai dengan tahap intelek pelajar. Tujuan kursus ini adalah untuk meningkatkan kecekapan berbahasa dalam konteks rasmi. Pengajaran dan pembelajaran akan dilaksanakan dalam bentuk kuliah, tutorial, tugas, aktiviti kebahasaan, main peranan (role-play) dan ujian. Pada akhir kursus ini, pelajar diharapkan dapat menguasai kemahiran berbahasa secara lisan dan tulisan.

Learning Outcomes:

Setelah tamat kursus ini, pelajar akan dapat:

1. Bertutur dengan berkesan dalam situasi rasmi dan tidak rasmi.
2. Menghasilkan penulisan yang jelas dan sistematik.
3. Membina hubungan baik dalam kerja berpasukan / organisasi.

References:

1. Siti Hajar Abdul Aziz. (2011) *Bahasa Melayu 1*. Kuala Lumpur: Oxford Fajar
2. Adenan Ayob (2009). *Bahasa Kebangsaan*. Shah Alam. Oxford Fajar.
3. Nik Safiah Karim et al. (2006) *Tatabahasa Dewan*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
4. Dewan Bahasa dan Pustaka (2007). *Kamus Dewan*. Edisi Keempat. Kuala Lumpur: Dewan Bahasa dan Pustaka, Kementerian Pendidikan Malaysia

MPU2232 INTERPERSONAL SKILLS

This course aims directly at fostering one's aspect of interpersonal skills namely communication skills, leadership, problem solving and decision making skills. Students' abilities to participate and interact with others effectively are addressed through individual tests and group projects

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply the principles of intrapersonal skills.
2. Communicate effectively using various communication media.
3. Demonstrate leadership and teamwork skills.

References:

1. Wood, J.T. (2016) *Interpersonal Communication: Everyday Encounters*. 8th Edition. Chapel Hill: University of North Carolina.
2. Robbins, S. P. & Hunsaker, P. L. (2012). *Training in interpersonal skills: tips for managing people at work*. Boston: Prentice Hall.
3. Pace, J. (2006). *The workplace: Interpersonal strengths and leadership*. Boston: McGraw Hill.

MPU 2133 BAHASA MELAYU KOMUNIKASI 1

Kursus ini melatih pelajar antarabangsa untuk berkomunikasi dalam Bahasa Melayu asas yang meliputi situasi kehidupan harian. Pelajar akan diperkenalkan dengan pertuturan dan penulisan Bahasa Melayu mudah. Pengajaran dan pembelajaran akan dilaksanakan dalam bentuk kuliah tutorial, tugas dan pengalaman pembelajaran pelajar di dalam dan di luar kelas. Pada akhir kursus ini, pelajar diharapkan dapat berkomunikasi dan menggunakan ayat mudah dengan berkesan.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Menerangkan kandungan teks penuh yang menggunakan ayat mudah dan ayat berlapis.
2. Bertutur dalam pelbagai situasi dengan menggunakan ayat mudah dan ayat berlapis.
3. Menyusun idea secara kreatif dan sistematik dalam penulisan karangan pendek

References:

1. Kamarul Afendey Hamimi. 2015. Bahasa Melayu Komunikasi Oxford Fajar Sdn.Bhd Zarina Othman, Roosfa Hashim & Rusdi Abdullah.2012. Modul Komunikasi Bahasa Melayu Antarabangsa ,KPT: Penerbit UKM Press.
2. Yong Chyn Chye, Rohaidah Mashudi, Maarof Abd Rahman, 2012. Bahasa Kebangsaan untuk pelajar luar negara: Malay language for international students. Petaling Jaya : Pearson Malaysia.
3. Adenan Ayob. 2009. Bahasa Kebangsaan. Shah Alam: Oxford Fajar.
4. Siti Hajar Abdul Aziz. 2008. Siri Pendidikan Guru Bahasa Melayu I. Shah Alam: Oxford Fajar Sdn. Bhd.

MPU 2163 PENGAJIAN MALAYSIA 2

Kursus ini membincangkan Sejarah dan Politik, Perlembagaan Malaysia, system dan Struktur Pentadbiran Negara dan agama Kepercayaan. Kursus ini adalah bertujuan untuk melahirkan graduan yang mempunyai identity kebangsaan dan semangat patriotism yang unggul. Pengajaran dan pembelajaran akan dilaksanakan dalam bentuk kuliah, tugas, peperiksaan dan pengalaman pembelajaran.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Menghurai dan mambahaskan kepelbagaian dalam masyarakat.
2. Mengulas kepentingan identity kebangsaan ke arah mengukuhkan semangat patriotisme
3. Membina dan memupuk hubungan dan interaksi social dalam kalangan pelajar.

References:

1. Mardiana Nordin & Hasnah Hussiin. 2014. Pengajian Malaysia (Edisi Kelima), Shah Alam : Oxford Fajar .

MPU2412 CAREER GUIDANCE 1

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 student to understand the important 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 employers' expectations in job hunt.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply appropriate interpersonal skills in building up their own towering personalities.
2. Differentiate their self-concept and self-image which reflect their personalities.
3. Demonstrate ability to plan their future career and targets.

References:

1. Devito, J. A. (2013). The interpersonal communication book (13thed.). U.S.A. Pearson
2. Zulkifli Musa (2008). Malaysia Job Seeker's Dilemma: A Practical Guide on How to Land a Dream Job. Kuala Lumpur: true Wealth Publishing.
3. James A. Athanasou & Raoul Van Esbroeck (2008). International handbook of career guidance. Springer.

MPU2422 COMMUNITY SERVICE 1

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 interest among the students to participate in community programs. It also enables student to understand the important of performing of community services and the ways to implement the programmes and activities. Besides that, it provides better understanding to the student 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 the community service programmes and activities.
2. Apply knowledge learnt in course in community service programmes and activities
3. Demonstrate basic entrepreneurship skills in community service programmes and activities
4. Explain the values, ethics and benefits of participating in community service programmes and activities

References:

1. Christine M. Cress, Peter J. Collier & Vicki L. Reitenauer. 2013. *Learning Through Serving: A Student Guidebook for Service-Learning and Civic Engagement Across Academic Disciplines and Cultural Communities*. US: Stylus.
2. Pusat Transformasi Komuniti Universiti. 2013. *Berilmu Berbakti 2012: Penglibatan Komuniti Untuk Penajaan dan Perkongsian Ilmu*. Serdang: Penerbit Universiti Putra Malaysia.
3. Saran Kaur Gill, Prabha Deri & Kamelia Shamsuddin. 2012. *The Power of Community Engagement: A Selection of Inspiring Initiatives*. Bangi: Penerbit Universiti Kebangsaan Malaysia.

MPU2432 CULTURE 1

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' personalities and social interaction skills, as well as foster closer relationship among the student 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 participating in a cultural event.
3. Explain the benefits of participating in a cultural activity.

References:

1. Hatta. 2013. Teater Filem dan Pengurusan Seni. Kuala Lumpur; Dewan Bahasa dan Pustaka.
2. Ab Samad Kechot & Sabzali Musa Kahn. 2011. Pengurusan Artistik: Kajian Mengenai Peranan Set Selaku Tenaga Kreatif Dalam Seni Persembahan Pentas di Malaysia. Bangi: Universiti Kebangsaan Malaysia.
3. Norliza Rofli & Eddin Khoo. 2009. Malaysian Culture: An Introduction. Kuala Lumpur: Jabatan Kebudayaan dan Kesenian Negara.

MPU2442 RAKAN MASJID 1

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' who understand their roles as Muslims and are responsible to develop the ummah. This course also aims to expose students to the function of mosque as the main institution in developing the Muslim society.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the beauty of Islam in every aspect in their life.
2. Demonstrate several activities in relation to the Muslim practice.
3. Discuss the significance of the organized activities in the course

References:

1. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). Pengimarahen Masjid dalam agenda ummah. Universiti Teknologi Malaysia Press: Skudai
2. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). Fungsi dan peranan masjid dalam masyarakat. Universiti Teknologi Malaysia Press: Skudai.
3. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). Pengurusan berkualiti memacu kecemerlangan pengurusan masjid. Universiti Teknologi Malaysia Press: Skudai.

MPU2452 SISWA-SISWI BOMBA DAN PENYELAMAT 1

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 Rescue Department, foot marching techniques, fire rescue, ascending and descending technique and basic emergency aid.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Participate actively in 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 of rescue, fire rescue and first aid.

References:

1. Akademi Bomba & Penyelamat Malaysia. 2012. *Mencari dan Menyelamat*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.
2. Akademi Bomba dan Penyelamat Malaysia. 2012. *Pengenalan Tali, Simpulan dan Ikatan*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.
3. Akademi Bomba & Penyelamat Malaysia. 2012. *Kawad Operasi Kebombaan*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.

MPU2462 SISWA-SISWI PERTAHANAN AWAM 1

Kursus ini memfokuskan perbincangan tentang peranan dan fungsi Angkatan Pertahanan Awam dan mengaplikasi ilmu pengetahuan dalam pertolongan cemas, dan kawad kaki. Melalui aktiviti seperti ini, pelajar dapat membuat perancangan, perlaksanaan tugas, pertolongan kecemasan dan aktiviti kebakaran

Learning Outcomes:

Upon completion of this course students should be able to:

1. Memberi peluang kepada pelajar mendapat pengetahuan dan kemahiran untuk membantu diri sendiri dan orang lain.
2. Memupuk nilai/sikap hormat menghormati, menurut perintah, berdisiplin, bekerjasama, bertanggungjawab, berhemah, kejujuran, keyakinan diri dan kepimpinan.
3. Menanam semangat kesedaran sivik, ketaatan dan cintakan negara serta penjagaan alam sekitar.
4. Mempertingkatkan ketahanan fizikal, mental dan daya kerohanian yang seimbang

References:

1. Malaysian Civil Defence Force (2010). Buku panduan pengurusan kor SISPA. Shah Alam: Pusat Penerbitan Universiti (UPENA), UiTM.

MPU2472 SPORTS MANAGEMENT 1

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 provide students with adequate information and understanding on the implementation and rules in sports management. This course also explores various aspects of sports management namely scope, basic principles, technique and current issues pertaining to sport management.

Learning Outcomes:

Upon completion of this course students should be able to

1. Prepare document in order to organize competition.
2. Apply knowledge gained by managing competition.
3. Participate and evaluate the benefits of participating in lecture or practical class related to sport, recreation and leisure.

References:

1. Rusell Hoyer, Matthew Nicholson, Aaron Smith, Bob Stewart & Hana Westerbeek (2012). *Sport Management and Application 3rd edition*. Routledge Taylor & Francis.
2. Milena Parent & Sharon Smith-Swan (2012). *Managing Major Sport Events Theory & Practise*. Routledge Taylor & Francis Group.

MPU2482 PERSONAL FINANCIAL MANAGEMENT 1

This course is to educate students on personal financial education. It is to open their minds to things that they should be prepared for financially when they enter the competitive job market. The course explains what they should start doing early in their life to achieve their financial dreams.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply the concept of financial planning, building financial wealth and avoiding financial troubles.
2. Organise financial planning events at campus level.
3. Examine the program implementation of the organized programme.

References:

1. AKPK (2011). *Power!* Kuala Lumpur : Agensi Kaunseling dan Pengurusan Kredit
2. AKPK (2010). *Money Sense: Getting Smart with Your Money*. Kuala Lumpur: Agensi Kaunseling dan Pengurusan Kredit.

UNIVERSITY REQUIREMENT

WED 10402 COMPETENCY ENGLISH
WED 20202 COMMUNICATION ENGLISH 1
WED 20302 COMMUNICATION ENGLISH 2

WMD10101 MANDARIN 1
WMD10201 MANDARIN 2

WID41009 INDUSTRIAL TRAINING

WED 10402 COMPETENCY ENGLISH

This course focuses on both receptive (reading) and productive (speaking & writing) skills as well grammar skills. It serves to enhance and strengthen students' proficiency in English. Assessments will be task-based where stimulating exercises and group activities will be employed to motivate students to use the language confidently in various situations.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply correct grammatical components in written form.
2. Express themselves effectively using appropriate language skills through discussion and presentation.
3. Analyse linear and non-linear comprehension texts using appropriate reading skills
4. Produce written work using correct writing techniques.

References:

1. Choo, W., Nyanaprakasan, S., Yee, S., & Yeoh, W. (2014). *Ace ahead MUET (5th ed)*. Shah Alam, Selangor: Oxford Fajar.
2. Kaur, H. & Jonas, F. (2013). *Effective practice MUET*. Shah Alam, Selangor: Oxford Fajar.
3. Kaur, N., Subramaniam, H. & Subramaniam, A. (2013). *Score in MUET*. Shah Alam, Selangor: Oxford Fajar.
4. Koh, S. (2011). *Effective text MUET*. Subang Jaya, Selangor: Penerbit Ilmu Bakti.

WED 20202 COMMUNICATION ENGLISH 1

This module is to enhance students' acquisition of English through language enrichment activities. The module enables students to enhance their English language proficiency through written work and oral communication. Students also engage in exploring and responding to ideas through group discussion and conducting a project. Students are then exposed to the fundamentals of presentation skills.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply correct grammatical skills in written form.
2. Produce professional business correspondence documents.
3. Organize an event through conducting a group discussion, writing a proposal, presenting and executing the event

References:

1. Gamble, T. K. and Gamble, M. (2012). *Communication Works*. 11th edition. McGraw-Hill.
2. Abdul Rahim Salam & Zairus Norsiah Azahar. (2008). *English communication for learners in engineering (2nd ed)*. Kuala Lumpur, Malaysia: Prentice Hall.
3. Guffey, M. E. & Loewy, D. (2013). *Essentials of business communication*. Mason, Ohio: South-Western Cengage Learning.

WED 20302 COMMUNICATION ENGLISH 2

Students are exposed to fundamentals writing skills that focus on academic writing. They are also exposed to language structures. In the second part of the course, students are guided the undertake academic writing assignment with consultation and previous writing assignment. In the last part of the course, students need to present based on the academic writing assignment using the learnt presentation skills.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Use appropriate mechanics in writing effectively.
2. Produce essay using mechanics writing techniques.
3. Prepare academic report by incorporating relevant academic resources.
4. Present information using effective presentation techniques.

References:

1. Rentz, K. & Lentz, P. (2014). *Lesikar's business communication: Connecting in a digital world*. McGraw-Hill Companies.
2. Howard, R. M. (2014). *Writing matters: A handbook for writing and research*. New York: McGraw-Hill.
3. Nor Ainun Zakaria, Aishah Muslim, Mazlin Mohamad Mokhtar, Prapagaran B. K. (2013). *Polytechnic series: Communicative English 3*. Shah Alam, Selangor: Oxford Fajar

WMD10101 MANDARIN 1

This course introduces the basic grammatical structures of Chinese sentences to acquire the basic oral and written communication skills. The contents of this course are Chinese writing system (including Pinyin), numbers, useful Chinese expressions to greet others, to introduce oneself and family members, date time, food and beverages.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Use words, phrases and sentences in Pinyin system and/ or Chinese characters.
2. Practise basic Chinese language for daily communication within the limits of vocabularies and sentence structures acquired in the course.
3. Perform learned Chinese vocabularies, phrases or short sentences in limited contexts

References:

1. Loi Hing Kee, Tan Hua An (2017). *Learn Mandarin 1*. Petaling Jaya: Cengage Learning Asia Pte Ltd.
2. Lai Siew Yoon, Tan Hua An, Tay Yang Lian. (2013). *Speak Chinese, An Introductory Course to the Chinese Language*. Petaling Jaya: Cengage Learning Asia Pte Ltd.
3. Lai Siew Yoon, Lim Yoke Len. (2010). *Shenghuo Huayu, An Introductory Course to the Chinese Language*. Singapore: Cengage Learning Asia Pte Ltd.

WMD10201 MANDARIN 2

This course introduces the basic grammatical structures of Chinese sentences in order to acquire the basic oral and written communication skills. The contents of this course are useful expressions in Mandarin to activities in university, hobby and interest, shopping and purchases, locations, direction, seeing a doctor and holiday activities.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Use Chinese words, phrases, short sentences about learned topics.
2. Practice Chinese language for daily communication within the limits of vocabularies and sentence structures acquired in the course.
3. Perform learned Chinese vocabularies

References:

1. Lai Siew Yoon, Tan Hua An, Tay Yang Lian (2013). *Speak Chinese, An Introductory Course to the Chinese Language*. Petaling Jaya: Cengage Learning.
2. Lai Siew Yoon, Lim Yoke Len. (2010). *Shenghuo Huayu, An Introductory Course to the Chinese Language*. Singapore: Cengage Learning Asia Pte Ltd.
3. Yamin Ma, Xinying Li. (2007). *Easy Steps to Chinese*. Beijing: Beijing Language & Culture University Press. Available from: <http://www.yes-chinese.com/zh-cn/course/view.html?id=3681>
4. Zhongwei Wu. (2010). *Contemporary Chinese*. Beijing: Sinolingua. Available from: <http://www.yes-chinese.com/en/course/view.html?id=3691>

WID41009 INDUSTRIAL TRAINING

This course exposes students to real industrial environment and gives them the opportunity to practice the knowledge and skills they have acquired during their academic years.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Demonstrate the right work manner and attitude with deliberation on safety and health in a working environment.
2. Perform tasks with minimum supervision and meet the company's expectations.
3. Apply technical knowledge, analytical and problem-solving skills to accomplish task assigned by the company.
4. Report effectively on work experience during attachment, including knowledge and skills acquired, in oral and written form.

COMMON CORE

WBD10102 INTRODUCTION TO ENTERPRENEURSHIP

WQD10103 TECHNICAL MATHEMATICS 1

WQD10203 TECHNICAL MATHEMATICS 2

CLD21102 STATISTICS

CLD10003 GENERAL CHEMISTRY

CLD10803 ORGANIC ANALYTICAL CHEMISTRY

CLD20002 OCCUPATIONAL SAFETY AND HEALTH

CLD20402 TRANSPORT PROCESS

WBD10102 INTRODUCTION TO ENTREPRENEURSHIP

This course aims to prepare students with the main characteristics of an entrepreneur and provide basic knowledge and skills in establishing a small venture.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe entrepreneurship value and culture
2. Demonstrate the ability to assess business environment
3. Identify entrepreneurship opportunity and explain the process in starting up a business
4. Develop a business idea and participate in entrepreneurship activities

References:

1. Azahari Jamaludin, Abd Razak Mohd Yusoff, Mohd Hazli Mohd Rusli, Salwah Che Mat & Zawiah Abdul Majid (2011). Introduction to entrepreneurship. Oxford Fajar
2. Donald F. Kuratko (2009). *Entrepreneurship: Theory, process, practice 8th Edition*. South Western Cengage Learning.
3. Azahari Jamaludin, Abd Razak Mohd Yusoff, Mohd Hazli Mohd Rusli, Hamidon Katan, Jimisiah Jaafar, Mohd Fauzi Zainol Abidin, Mohd Radzi Zainuddin, Rosnizza Ramlan, Salwah Che Mat & Zawiah Abdul Majid (2012). *Technopreneurship*. Kuala Lumpur: Oxford Fajar

WQD10103 TECHNICAL MATHEMATICS 1

This course covers general mathematics components involving algebra, trigonometry and complex numbers. It emphasizes on developing students' competencies to prepare them for higher level Mathematics. The main method of delivery combines lecture, tutorial and drilling activities to generate students' interest,

Learning Outcomes:

Upon completion of this course students should be able to:

1. Solve operations and problems related to algebra.
2. Apply trigonometric functions in solving triangular problems.
3. Solve complex number operations in several forms.

References:

1. Mathematics Central Committee Universiti Kuala Lumpur. 2012. Technical Mathematics 1 Workbook (Modules Prepared by MCC UniKL). Pearson Custom Publishing: Singapore.
2. Stroud, K. & Booth, D. 2013. Engineering Mathematics (7th Edn). Palgrave Macmillan: UK.
3. Bird, J. 2014. Engineering Mathematics (7th Edn). Routledge: Oxford.
4. Peterson, J. 2012. Technical Mathematics (4th Edn). Delmar Cengage Learning: New York.

WQD10203 TECHNICAL MATHEMATICS 2

This course will cover intermediate level of mathematics involving trigonometry, functions, limits, differentiation and integration. It emphasizes on developing students' mathematical competencies in calculus to prepare them for higher level of mathematics for their science and engineering technology courses.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Solve trigonometric equations.
2. Solve operations and problems related to functions.
3. Apply differentiation and integration techniques to solve practical problems.

References:

1. Mathematics Central Committee Universiti Kuala Lumpur. 2012. Technical Mathematics 2 Workbook (Modules Prepared by MCC UniKL). Pearson Custom Publishing: Singapore.
2. Stroud, K. & Booth, D. 2013. Engineering Mathematics (7th Edn). Palgrave Macmillan: UK.
3. Bird, J. 2014. Engineering Mathematics (7th Edn). Routledge: Oxford.
4. Peterson, J. 2012. Technical Mathematics (4th Edn). Delmar Cengage Learning: New York.

CLD 21102 STATISTICS

This course is aimed at introducing students to basic language of statistics and to apply statistical concepts in engineering. Students will be exposed to selecting, computing and interpreting basic statistical tools.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Illustrate and explain a descriptive and inferential statistics for interpreting results.
2. Apply appropriate statistical models or methods to solve statistical problems
3. Interpret the outcome from statistical software output with the statistical concept

References:

1. Mann P.S, (2004), Introductory to Statistics, Fifth Edition, John Wiley & Sons
2. William Mendenhall, Robert J. B, & Barbara M. B (2002). A brief introduction to probability and statistics. Duxbury/ Thomson Learning.
3. Larry J. S. (2006). *Beginning Statistics*, Second Edition. Mc Graw Hill.
4. Montgomery, D.C. & Runger, G.C. (2003). *Applied Statistics and Probability for Engineers*, Third Edition, John Wiley & Son, International Edition.

CLD10003 GENERAL CHEMISTRY

General Chemistry provides fundamental knowledge in chemistry. This course will equip students with essential knowledge that will enable them to be used and applied in chemical engineering technology and any related application. Students will also be exposed to basic laboratory skills including tools, chemicals, techniques and safety awareness.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply knowledge on solving problems related to basic principles of chemistry. (C3)
2. Handle chemicals and apparatus correctly and properly in the application of basic principles of chemistry during laboratory sessions. (P3)
3. Perform effectively as a team member in applying good laboratory techniques (A3)

References:

1. Chang, R (2013), Chemistry, 11th ed., McGraw Hill
2. Zumdahl. S.S, Zumdahl, S.A. (2013), Chemistry, 9TH ed. Cengage Learning
3. John McMurry, Robert C. Fay, (2011), Chemistry, 6th ed, Prentice Hall.
4. Ebbing, D., (2012), General Chemistry, 10th ed., Houghton 4. Barrows.
5. Wentworth.R, Munk. H. B. (2012), Experiments in General Chemistry, Lab Manual, 10th ed,

CLD10803 ORGANIC ANALYTICAL CHEMISTRY

This course provided students with the basic concepts in organic 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. Apply the phenomena, basic concepts, laws and principles in organic and analytical chemistry.
2. Perform laboratory works related to reaction of organic compound.
3. Assist affectively as a team member in performing good laboratory technique

References:

1. Carey, F.A., Organic Chemistry, 7th Edition, McGraw-Hill (2008) Solomon, T.W. G., Organic Chemistry, 8th Edition, Wiley. (2008)
2. Skoog, D.A., West, D.M., and Holler, F.J., (1997), Fundamentals of Analytical Chemistry, 8th Edition, Saunders College Publishing.
3. Jag, M., (2004), Organic Analytical Chemistry: Theory and Practice, Alpha Science International. Jag, M., Organic Spectroscopy: Principles and Applications, Alpha Science International, Ltd.

CLD20002 OCCUPATIONAL SAFETY AND HEALTH

This course will impart knowledge and create an awareness to occupational safety and health. Students will be exposed to the design, techniques, legal, society and cultural issues in making the workplace as safe as possible.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Illustrate the ability to recognize the types of Hazards, the appropriate Control Measures and risks associated with it, in accordance to Occupational Safety & Health Act (1994) or ACT 154 towards Safety and Health Issues at Workplace (C3, PLO6).
2. Collaborate with Team Members in carrying out activities related to Occupational Safety and Health(P2, PLO9)
3. Demonstrate business practices and opportunities as well as technopreneurial competencies to all work activities related to Occupational Safety And Health

References

1. Crowl, D. A., and Louvar, J. F, *Chemical Process Safety Fundamentals with Applications*, Prentice Hall [TP 150.S24 C76 2002]
2. Goetsch, D. L.,(2002),*Occupational Safety and Health For Technologies, Engineers and Managers*, Prentice Hall.
3. Roy E. S., (1999), *Chemical Process Safety: Learning From Case Histories*, Butterworth-Heinemann
4. Di Pilla. S.,(2003), *Slip & Fall Prevention, a Practical Handbook*, Lewis Publishers

CLD20402 TRANSPORT PROCESS

This course will provide students with the knowledge of heat and mass transfer which will be useful for their study in later years.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain knowledge of three modes of heat transfer which are conduction, convection and radiation
2. Apply basic calculation in solving problems related to heat transfer
3. Perform laboratory works safely according to the related operating manual

References:

1. Yunus A. Çengel, (2004), *Heat Transfer: A Practical Approach*, 2nd Edition. McGraw-Hill, USA
2. Geankoplis, (2003), *Transport Processes and Separation Proces Principles*, 4th Edition. Prentice Hall
3. Holman, J.P. (2002), *Heat Transfer*, 9th Edition. McGraw Hill

DISCIPLINE CORE

CLD10703 ENGINEERING DRAWING AND COMPUTING
CLD10502 PRINCIPLES OF CHEMICAL PROCESS
CLD10603 FLUID MECHANICS
CLD20102 ELECTRICAL TECHNOLOGY
CLD20202 PROCESS INSTRUMENTATION
CLD20302 THERMODYNAMICS
CLD20502 BASIC ENGINEERING WORKSHOP
CKD20002 REACTOR TECHNOLOGY
CKD20102 SEPARATION TECHNOLOGY
CPD39806 FINAL YEAR PROJECT

CLD10703 ENGINEERING DRAWING AND COMPUTING

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. Apply theoretical knowledge of computing application in current practice and its application in chemical engineering technology.
2. Reproduce 2D models using basic symbols used in computing and engineering drawing.
3. Construct a piping and instrumentation diagram by using CAD software.

References:

1. Shelly, G. B., Quasney, J. J., Freund S. M. & Enger, R. E. (2011). Ms. Excel 2010: Complete.
2. Bruce A. Finlayson. (2014). Introduction to Chemical Engineering Computing. 2nd ed
3. Ván Darío Gil Chaves, Javier Ricardo Guevara López, José Luis García Zapata, Alexander Leguizamón Robayo, Gerardo Rodríguez Niño. (2016). Process Analysis and Simulation in Chemical Engineering. 1st ed

CLD10502 PRINCIPLES OF CHEMICAL PROCESS

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. Identify the dimension of an equation and unit conversion
2. Apply the concept of material balances and energy balances in chemical process plants
3. Solve material balances and energy balances to account for the flows to and from the process and its units.

References:

1. Felder & Rousseau (2000), *Elementary of Chemical Process*, 3rd Edition, John Wiley
2. Himmeblau. D.M. (1996), *Basic Principle and Calculation In Chemical Engineering*, 6th Edition, Prentice Hall
3. Regina (2007), *Introduction to Chemical Processes: Principles, Analysis, Synthesis*, Mc Graw Hill International Edition

CLD10603 FLUID MECHANICS

This course is an introduction to fluid mechanics and emphasizes fundamental concepts and problem-solving techniques. Topics to be covered include fluid properties, pressure, fluid static's, control volume analysis and internal flow (flow in pipes and conduits). Students will be familiarized with the equipment involved in fluid flow. The student will also be able to evaluate basic concepts in selecting and analyzing components of fluid systems

Learning Outcomes:

Upon completion of this course students should be able to:

1. Assess the basic theory of fluid in solving problems related fluid static and dynamic (C3, PLO1)
2. Discuss the concepts of static and dynamic fluid and its application in fluid system (C2, PLO2)
3. Conduct laboratory experiments related to fluid static and dynamic by following standard operating procedure and safety awareness

References:

1. Cengel, Y.A. and Cimbala, J.A. (2006). Fluid Mechanics. Boston: Mc Graw Hill
2. Munson B.R., Young D.F., Okiishi T.H., (2006). Fundamentals of Fluid. (5nd Ed). New Jersey: J. Wiley & Sons. [TA357.M86 2006]
3. McCabe and Smith. (2005). Unit Operations of Chemical Engineering. (7th Ed). Boston: McGraw-Hill
4. John F. Douglas (2001). Fluid Mechanics. 4th Edition, Prentice Hall

CLD20102 ELECTRICAL TECHNOLOGY

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

References

1. Edward Hughes (2012) "Electrical Technology", 11th. Edition, Prentice Hall
2. Floyd (2006), "Principles of Electric Circuits", 8th Edition, Prentice Hall
3. Theodore Wildi (2002), "Electrical Machines, Drive, and Power Systems", 5th. Edition, Prentice Hall
4. Charles K. Alexander and Matthew N.O. Sadiku (2007), "Fundamental of Electric Circuit", 3rd Edition, McGraw-Hill

CLD20202 PROCESS INSTRUMENTATION

This course will impart knowledge and application of process instrumentation. Students will be exposed to the principle and application including the maintenance, troubleshooting and safety aspects of process instrumentation.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the working principle, maintenance and troubleshooting procedures of the measurement devices.
2. Relate the application of instruments in the real plant/factory.
3. Display the ability to conduct the experiment by following standard operating procedure and safety awareness

References:

1. Doebelin, E.O., (1990), *Measurement System; Application and Design*, Fourth Edition, McGraw Hill International Editions
2. Perry, R.H & Green, D., (1994), *Perry's Chemical Engineer's Handbook*, Six Edition, McGraw Hill International Editions

CLD20302 THERMODYNAMICS

This is an introductory course aimed at providing students with the fundamental concepts in thermodynamics. These concepts are essential since the students will apply this knowledge in other engineering courses.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Identify the thermodynamics properties of pure substances using properties table
2. Describe the applications of thermodynamics
3. Relate the closed and open system in the First Law and Second Law of thermodynamics.

References:

1. Cengel, Yunus A., Boles, Michael A. (2006) *Thermodynamics: An Engineering Approach*, 5th edition, McGraw-Hill.
2. Sonntag, Richard E., Borgnakke, Claus. (2001) *Introduction to Engineering Thermodynamics*, John Wiley & Sons

CLD20502 BASIC ENGINEERING WORKSHOP

This is an introductory course aimed at providing students with the basic mechanical engineering workshop practice. Students will be familiarized with basic principles and practical of hand tools in basic engineering workshop. The student also will be able to perform basic machining operation and basic welding operation

Learning Outcomes:

Upon completion of this course students should be able to:

1. Differentiate various tools, equipment and safety awareness in metal fabrication, machining and welding activities.
2. Perform metal fabrication, machining and welding process by using suitable tools and equipment.
3. Work effectively in a team either as a leader or team member.

References:

1. Rao, P. N. (2007) *Manufacturing Technology, Foundry, Forming and Welding*, 2nd Edition, Tata McGraw-Hill
2. Jeffus, L.F. (1997), *Welding: Principles and Application*, 4th ed, Delmar Pub
3. Frisch, D. & Frisch, S. (1998), *Metal: Design and fabrication*, Whitner Library of Design
4. Cary, H.B. (1997). *Modern Welding Technology*, Prentice Hall

CKD20003 REACTOR TECHNOLOGY

This course will impart knowledge of chemical reaction. Students will be exposed to chemical kinetics, different reactor operations, catalysis and catalytic reaction.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the concept of chemical kinetics and the importance of catalyst in chemical reaction
2. Solve problems related to chemical reaction and reactor design based on the concept of chemical kinetics
3. Conduct experiments on chemical reactors safely based on procedures

References:

1. Fogler H.S., (1992), *Elements of Chemical Reaction Engineering*, Third Edition. Prentice-Hall International Series
2. Holland C.D., (1989), *Fundamental of Chemical Reaction Engineering*, Prentice Hall Englewood Cliffs
3. Smith, J. M. (1986), *Chemical Engineering Kinetics*, Third Edition, Singapore, McGraw-Hill International
4. Hill, C. G. (1990), *Chemical Engineering Kinetics & Reactor Design* by New York, John Wiley & Sons

CKD20103 SEPARATION TECHNOLOGY

This course will provide students with the basic principle and operations of separation in chemical engineering technology and expose students to separation technology equipment.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the basic principles and operations in chemical and mechanical separation
2. Apply the fundamental knowledge in separation technology process
3. Perform laboratory experiments safely

References:

1. Geankoplis, C.J. (2003). *Transport Processes And Separation Process Principles*, 4th Edition, Prentice Hall
2. Coulson & Richardson (1983). *Chemical Engineering, Vol.2*, Pergamon Press, Oxford
3. Wankat, P.C. (1988). *Equilibrium Stage Separations*, Elsevier, New York
4. Treybal, R.E. (1981). *Mass Transfer Operations*, 3rd Ed., McGraw-Hill

CPD39806 FINAL YEAR PROJECT

This course introduces students with ability and skills in conducting a technical 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. Plan the project activities to fulfil the proposed research problem.
2. Manage and execute the project plan to accomplish project objectives.
3. Analyse project results using appropriate technique or tools.
4. Produce a project report in accordance with the specified standard format.
5. Present and defend the project outcomes effectively.

DIPLOMA IN CHEMICAL ENGINEERING TECHNOLOGY (PROCESS)

R/524/4/0035 / MQA A10854

PROGRAMME OVERVIEW

Diploma in Chemical Engineering Technology (Process) at UniKL MICET exists to outwit semi-skilled process technologist as prominent workers that emphasize more on hands-on ability in each related fields or industries. Besides their competence, students are also given priorities to have better view on environmental awareness. We will also equip our students with knowledge of non-technical subjects such as technical communication which is important to process technologist for developing the chemical industries in Malaysia.

In our 3-year program, we offer hands-on experience in a lot of industrial-like equipment thus our graduates will be able to complete in the technological and industrial world. Apart from the basic chemical engineering knowledge in the mass and heat transfers, unit operations, fluid mechanics and process control, students will be specialized in petrochemical and natural gas processing, oleo chemical and other industrial chemical processes.

Students will experience the real industrial environment in the basic laboratories to the pilot plants. They will also be given the opportunities to manufacture their own soap and margarine for example, refine palm oil and design an experiment to fulfill their final year project requirements.

A chemical process technology graduate is able to pursue a wide variety of industries. A significant number of chemical process technology graduates use chemical technology as a foundation for careers in other professions. These include:

- Upstream workforce
- Downstream workforce
- Maintenance workforce
- Production and process workforce
- Research and laboratory workforce

CAREER PATH

- Students graduated with this degree are flexible and may ventures in many field as
- Chemical Process Engineer, Process Safety Engineer, Control System Engineer & Manufacturing Process Engineer, Chemical Operation and many more.

Courses

Diploma in Chemical Engineering Technology (Process)

CPD20002 PLANT UTILITY AND SAFETY

**CPD20103 PETROCHEMICALS AND PETROLEUM
REFINING TECHNOLOGY**

**CPD20202 ENVIRONMENTAL CONTROL AND
MANAGEMENT**

CPD20302 PROCESS CONTROL

CPD20402 PILOT PLANT OPERATION 1

CPD30103 PLANT MAINTENANCE AND INSPECTION

CPD30203 OIL AND FAT PROCESS TECHNOLOGY

CPD30303 PILOT PLANT OPERATION 2

CPD20002 PLANT UTILITY AND SAFETY

To give understanding on the supporting facilities, this is connected to the major processing equipment in the plant.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the function of various equipment utility and basic trouble shooting plant utilities with methods to solve the problems.
2. Apply fundamental operation of plant equipment and basic safety practice for various plant utilities.
3. Display understanding of the plant utilities and safety fundamental based on industrial visit

References

1. Nag P.K. (2004). *Power Plant Engineering*, 3rd Edition, Mc Graw Hill International
2. Handbook of Power (1992). *Utility and Boiler*. 6th Ed., Penwell Publishing Co
3. Perry, R.H. & Green, D. (1994). *Perry's Chemical Engineer's Handbook*, 6th Ed., McGraw Hill International Editions
4. Sinnott, R.K. (1983). *Chemical Engineering*, Vol. 6, Pergamon Press Ltd, Oxford
5. Boiler Operators Handbook. (1989). *National Fuel Efficiency Service Ltd.*, Graham & Trotman

CPD20103 PETROCHEMICAL & PETROLEUM REFINING TECHNOLOGY

This course is aimed at providing students with the fundamentals of petroleum refining, petrochemical technology and natural gas processing technology.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Distinguished the processes involved in petroleum refining, natural gas and petrochemical.
2. Solve the problems involve in petroleum refining, natural gas and petrochemical synthesis.
3. Perform analysis of petroleum product and natural gas by following standard applied

References

1. Presson, J.C. (2011). *Biology Dimension of Life*. Boston: Mc Graw Hill. [QH308.2 P745 2011]
2. Scott, F. (2015). *Biological Science*. (2nd Ed). New Jersey.: Pearson Prentice Hall. [QH 308.2.F74 2015]
3. Martin, S. (2012). *Biology Inquiries*. Standard based Labs, assessments and Discussion Lessons. San Francisco: John Wiley. [QH 315.S55 2012]
4. Sandra, A. & Brian, A. (2008). *Biology*. Understanding Life. New York: John Wiley & Sons. [QH 302.2.A45 2008]
5. George H. (2014). *Biology*. (2nd Ed). Canada: Schaum's Outlines
6. Stephen, R., Jeremy S., Elizabeth A., Hugh A. & Claudia G. (2007). *Cell Biology*. (2nd Ed). United Kingdom: Wiley-Liss

CPD20202 ENVIRONMENTAL CONTROL & MANAGEMENT

This course will provide students with the knowledge in environmental control and management of pollution. These include basic principles in managing and assessment of pollution, basic water quality testing and the relevant regulations in environment protection in Malaysia.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the environmental terminology and the relevant regulations of environmental protection in Malaysia.
2. Analyze the assessment and control methods in air pollution, noise pollution and waste water.
3. Discuss the roles of chemical engineering technologist in the environmental management.

References

1. P.C. Trivedi (2004) *Environmental Pollution and Management*, Aavinskar Publisher
2. Noel De Nevers (1995), *Air Pollution Control Engineering*, McGraw Hill Company
3. Tchobanoglous, G. & Burton, F.L (1991). *Wastewater Engineering: Water Treatment, Disposal & Reuse*, McGraw Hill Inc

CPD20302 PROCESS CONTROL

This course will provide students with the knowledge in the various aspects of process control and its applications in chemical industries. These concepts are essential since the students will apply the knowledge gained in process control related applications.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Employ the knowledge of process control in chemical process flow diagram.
2. Apply the principles of control strategies for various chemical process applications.
3. Perform laboratory experiments safely.

References

1. Seborg, D. E., Edgar, T. F. & Mellichamp D. A. (2011). *Process Dynamics and Control*. (3rd Ed.) John Wiley
2. Thomas, A. H. (2007). *Measurement and Control Basics*. (4th Ed.) ISA Control Series
3. Radhakrishnan, V.R. (1997). *Instrumentation for Chemical, Mineral and Metallurgical Processes*. Allied Publishers Ltd. New Delhi.
4. Smith, C.A. & Corripio, A. B. (2006). *Principles and Practice of Automatic Process Control*. (3rd Ed.) John Wiley
5. Shinskey, F.G. (1997). *Process Control System: Application, Design and Tuning*. (4th Ed.) McGraw-Hill.
6. Azzo, J. J. D. & Houpis, C.H. (1998). *Feedback Control System Analysis and Synthesis*. (2nd Ed.) McGraw-Hill
7. Coughanowr, D.R. & LeBlanc, S. (2008). *Process Systems Analysis and Control*. (3rd Ed.) McGraw-Hill.

CPD20402 PILOT PLANT OPERATION 1

The course is aimed at providing students with the basic practical knowledge in chemical process operations such as petrochemical and oleo-chemical processing.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Employ the various processing methods in the production of petrochemical and oleo-chemical products
2. Demonstrate the ability of team members in planning and discussing the current application of petrochemical and oleo-chemical product.
3. Perform the laboratory experimental that related to the current application of petrochemical and oleo-products.

References

1. Austin, G.T. (1987) *Shreve Chemical Process Industries*, 5th Ed. McGraw Hill.
2. Hamm, W. & Hamilton, R.J. (2000). *Edible Oil Processing (Chemistry and Technology of Oil and Fats)*. CRC Press
3. (1998). *Personal Care Formulas: Cosmetics & Toiletries* Allured Pub. Corp
4. Jakobi, G. & Lohr, A. (1987). *Detergents and Textile Washing: Principles and Practice*. VGH, Wienheim

CPD30103 PLANT MAINTENANCE & INSPECTION

This course is to provide fundamental knowledge in plant maintenance and inspection. It also introduces students to the importance of maintenance strategy and principles.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain basic plant management, plant maintenance and inspection in a plant process.
2. Distinguish between maintenance work, repair work, commissioning, shutdown and start up maintenance.
3. Apply the various maintenance strategies in a plant maintenance.

Reference

- Higgins L.R and Mobley R. K, (1998). *Maintenance Engineering Handbook*, 6th Edition, Mc Graw Hill

CPD 30203 OIL AND FAT PROCESS TECHNOLOGY

This course introduces students to the Oils and Fat Technology and practices. The course encompasses source of oils, common methods of extraction, refining, modification and usage. 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. Relate an understanding of Oil and Fat Technology fundamental with previous courses.
2. Explain facts involved in basic oil and fat chemistry and engineering parts.
3. Perform experimental activities associate with oil and fats technology
4. Develop potential products or modification process as entrepreneurship projects

References:

1. Advances in Oil Palm Research Vol 1 and Vol 2, MPOB (Ministry of Primary Industries Malaysia, 2000
2. Bailey's Industrial Oil and Fat Products Vol 1 – Vol 6, 6th Edition, A John Wiley & Sons, Inc., Publication, 2005
3. Fats and Oils; Formulating and Processing Application, 2nd Edition, CRC Press, 2004
4. Edible Oil Processing / edited by Wolf Hamm and Richard J. Hamilton, Sheffield, England; Boca Raton, FL: Sheffield Academic Press Sheffield, England; Boca Raton, FL: CRC Press, 2000
5. Bleaching and Purifying Fats and Oils Theory and Practice / H.B.W. Patterson Urbana, Ill.: AOCS PRESS, 2009
6. Ullman's Encyclopedia Of Industrial Chemistry, 6th Edition, 2003
7. The Lipid Handbook, 2nd Edition, Chapman & Hall Chemical Data Base, 1994

CPD30303 PILOT PLANT OPERATION 2

This course is aimed at providing students with the basic practical knowledge in plant utility operations and selected testing. The course also introduces students with equipment involved in plant utilities and selected testing. This practical knowledge is essential since the students will encounter these in their future engineering career.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Classify the application of thermodynamics in chemical engineering technology.
2. Demonstrate ability to work in team either as a leader or member
3. Organize a technical project on application knowledge of thermodynamics, heat transfer and fluid mechanics

References

1. K. Nag, Tata. *Power Plant Engineering*, 2nd Ed., McGraw-Hill Publishing Company Limited.
2. Robert C. (2002). *Rosaler Standard Handbook of Plant Engineering*, P.E., McGraw-Hill.
3. Perry, R.H. & Green, D. (1994). *Perry's Chemical Engineer's Handbook*, 6th Ed., McGraw-Hill International Editions.
4. Ibrahim Dincer, *Refrigeration Systems and Applications*, Wiley & Sons, Ltd. Operating manual for the equipment.

PROGRAMME STRUCTURE: *(subject to amendments)*

YEAR 1: SEMESTER 1

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10703	ENGINEERING DRAWING & COMPUTING	3	15	30	36	9	30	120
2	WED10402	COMPETENCY ENGLISH	2	14	14	0	5	47	80
3	MPU 2313 MPU 2323	AMALAN ISLAM DI MALAYSIA (LOCAL MUSLIM) RELIGIOUS PRACTICES IN MALAYSIA (LOCAL NON MUSLIM & INT.)	3	17	0	0	34	69	120
4	WQD10103	TECHNICAL MATHEMATICS 1	3	34	17	0	6	63	120
5	CLD10003	GENERAL CHEMISTRY	3	17	11	47	7	38	120
6	WMD10101	MANDARIN 1	1	21	0	0	4	25	50
7	MPU24*2	CO-CURRICULUM	2						80
TOTAL			17	118	72	83	65	272	690

YEAR 1: SEMESTER 2

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10803	ORGANIC & ANALYTICAL CHEMISTRY	3	34	0	36	7	43	120
2	CLD10502	PRINCIPLES OF CHEMICAL PROCESS	2	14	13	17	4	32	80
3	WED20202	COMMUNICATION ENGLISH 1	2	13	13	0	3	51	80
4	CLD20102	ELECTRICAL TECHNOLOGY	2	14	0	22	5	39	80
5	CLD10603	FLUID MECHANICS	3	15	20	36	4	45	120
6	MPU2232	INTERPERSONAL SKILLS	2	17	0	0	25	78	120
7	WQD10203	TECHNICAL MATHEMATICS 2	3	34	17	0	6	63	120
TOTAL			17	141	63	111	54	351	720

YEAR 2: SEMESTER 3

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD20002	OCCUPATIONAL SAFETY AND HEALTH	2	14	12	0	6	48	80
2	WMD10201	MANDARIN 2	1	21	0	0	4	25	50
3	CLD20202	PROCESS INSTRUMENTATION	2	14	0	25	4	37	80
4	MPU2163 MPU2133	PENGAJIAN MALAYSIA 2 (LOCAL)/ BAHASA MELAYU KOMUNIKASI 1 (INT)	3	17	0	0	25	78	120
5	CLD20302	THERMODYNAMICS	2	14	22	7	6	31	80
6	CLD20402	TRANSPORT PROCESS	2	15	0	33	4	28	80
7	CLD20502	BASIC ENGINEERING WORKSHOP	2	17	0	33	3	27	80
8	WBD10102	INTRODUCTION TO ENTREPRENEURSHIP	2	17	28	0	6	29	80
9	WED20302	COMMUNICATION ENGLISH 2	2	13	13	0	3	51	80
TOTAL			18	142	75	98	61	354	730

YEAR 2: SEMESTER 4

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CKD20003	REACTOR TECHNOLOGY	3	14	11	29	7	59	120
2	CLD21102	STATISTICS	2	15	22	0	5	38	80
3	CPD20002	PLANT UTILITY AND SAFETY	2	17	0	34	6	23	80
4	CPD20202	ENVIRONMENTAL CONTROL & MANAGEMENT	2	14	0	19	4	43	80
5	CPD20302	PROCESS CONTROL	2	14	0	22	4	40	80
6	CPD20402	PILOT PLANT OPERATION 1	2	17	0	45	2	16	80
7	CKD20102	SEPARATION TECHNOLOGY	2	12	0	16	5	47	80
8	CPD20103	PETROCHEMICAL & PETROLEUM REFINING TECHNOLOGY	3	28	0	37	4	51	120
TOTAL			18	131	33	202	37	317	720

YEAR 3: SEMESTER 5

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CPD30303	PILOT PLANT OPERATION 2	3	0	17	45	3	55	120
2	CPD30103	PLANT MAINTENANCE & INSPECTION	3	28	28	4	6	54	120
3	CPD30203	OIL & FAT PROCESS TECHNOLOGY	3	16	0	42	5	57	120
4	WPD39806	FINAL YEAR PROJECT	6	5	0	195	1	39	240
TOTAL			15	49	45	286	15	205	600

YEAR 3: SEMESTER 6

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WID41009	INDUSTRIAL TRAINING	9	0	0	320	4	36	360
TOTAL			9	0	0	320	4	36	360

Total Credit to Graduate (TCG): 94

*** Applicable for Malaysian Students**

Students must register and pass subject MPU3213 Bahasa Kebangsaan A before graduation if attained grade D and E in Bahasa Melayu at SPM level and never passed Bahasa Kebangsaan A in their previous programme. Other conditions: refer to your Academic Advisor. Students under this category will graduate with additional of 3 credits on top of TCG.

* Passing mark for all MPU Compulsory subjects is 50 marks (C).

Co-Curriculum Courses

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU2412	CAREER GUIDANCE 1	2	17	0	0	18	45	80
2	MPU2422	COMMUNITY SERVICE 1	2	17	0	0	9	54	80
3	MPU2442	RAKAN MASJID 1	2	17	0	10	1	52	80
4	MPU2452	SISWA-SISWI BOMABA & PENYELAMAT 1	2	17	0	25	0	38	80
5	MPU2462	SISWA-SISWI PERTAHANAN AWAM	2	17	0	16	0	47	80
6	MPU2472	SPORTS MANAGEMENT 1	2	17	0	9	8	46	80
7	MPU2482	PERSONAL FINANCIAL MANAGEMENT 1	2	17	0	18	3	42	80
8	MPU2432	CULTURE 1	2	17	0	23	0	40	80

DIPLOMA IN CHEMICAL ENGINEERING TECHNOLOGY (FOOD)

R/524/4/0038 / MQA A10857

PROGRAMME OVERVIEW

This programme introduces the field of food science and technology, the sciences used to provide knowledge for food technology and the importance of food in providing proper nutrition. It also provides students with theoretical and practical, hands-on skills in nutrition, food chemistry, food microbiology, analysis of food, instruments used for food sample analysis, food packaging, food preservation, toxicology and post harvested technology in food. The students may study more fundamental phenomena that are directly linked to the production of particular food products and its properties. The study of food science and technology emphasizes on the composition of foods and the changes that occur when they are subjected to food processing. Functional foods are foods that promote health beyond providing basic nutrition. Safety of food is a basic requirement of food quality. "Food safety" implies absence or acceptable and safe levels of contaminants, adulterants, naturally occurring toxins or any other substance that make food injurious to health on an acute or chronic basis. Food quality can be considered as a complex characteristic of food that determines its value or acceptability to consumers. Besides safety, quality attributes include nutritional value; organoleptic properties such as appearance, colour, texture, taste; and functional properties. Examples of the activities of food technologists include the development of new food products, design of processes to produce these foods, choice of packaging materials, shelf-life studies, and sensory evaluation of the product with trained expert panels or potential consumers as well as microbiological and chemical testing.

CAREER PATH

Our graduates have unlimited opportunities in getting jobs either in public or private sectors. In public sectors they may work at food related government bodies like Department of Health, Educational institutions, MARDI, SIRIM, MPOB, and others. They may join various industries like cereal manufacturing, bakery products, sugar refinery, manufacturing of flour-based sweetening agent, chocolate and confectionary products, fruits and vegetable products canning industry, edible oils and its products and beverages. The scopes of career may vary from productions supervisors, quality assurance supervisors, technicians, assistant chemist, R&D assistants, operators and others.

COURSES

Diploma in Chemical Engineering Technology (Food)

CFD20103 FOOD PROCESSING TECHNOLOGY

CFD20203 FOOD MICROBIOLOGY

CFD20302 FOOD CHEMISTRY

CFD20403 FOOD QUALITY AND SANITATION

CFD30003 FOOD ANALYSIS

CFD30103 FOOD PACKAGING

CFD30303 SENSORY EVALUATION OF FOOD

CFD20103 FOOD PROCESSING TECHNOLOGY

To impart knowledge and technical skills in processing and preservation technology of various food products.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the principle of food processing and preservation techniques applied at low, ambient or high temperature and the effect of processing techniques towards food products/ingredient.
2. Demonstrate the working principle of food processing equipment/machinery and the ability of handling and troubleshooting of the equipment/machinery.
3. Work with team members in planning, performing and reporting a scientific inquiry, practical or assignment related to new innovative food product and food processing technology.

References

1. Gould, W.A. (2013). Fundamentals of Food Processing and Technology Elsevier
2. Swarup, A. and Shrivastava, P. (2013). Techniques of Food Preservation. Discovery Publishing House
3. Gayen, S. (2013). Food Preservation with an Attitude: Guide to preserve food. Lap Lambert Academic Publishing GmbH KG

CFD20203 FOOD MICROBIOLOGY

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. Apply theories and concepts of microorganisms and their factors that influence microbial growth in food applications, food spoilage, food intoxication and food infection.
2. Organize important technique and analysis in food microbiology.
3. Perform a scientific inquiry on food microbiology with team members.

References:

1. Ray, B. and Bhunia A. (2013). *Fundamental Food Microbiology*, 5th edition, CRC Press.
2. Thomas J. Montville, Karl R. Matthew (2012), *Food Microbiology: An Introduction*, ASM Press.
3. Garg N. and Garg K.L. (2010). *Laboratory Manual of Food Microbiology*, I K International Publishing House Pvt. Ltd
4. Adams M.R and Moss M.O. (2008). *Food Microbiology*, 3rd edition, Royal Society of Chemistry
5. Jeffrey L. Kornacki (2010). *Principles of Microbiological Troubleshooting In the Industrial Food Processing Environment*, Springer

CFD20302 FOOD CHEMISTRY

This course aimed to provide the students with understanding of the fundamental concept of chemical properties and reactions in food.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the structure, properties and functions of major food constituents such as water, carbohydrates, lipids, proteins, enzymes, vitamins, mineral, pigments and other food additives.
2. Compute scientific inquiry/assignment related to food chemistry.
3. Explain selected topics in food chemistry.

References:

1. Brady, John W. Introductory food chemistry. Comstock Pub. Associates, 2013.
2. Simpson, Benjamin K., et al. Food biochemistry and food processing. John Wiley & Sons, 2012.
3. Whitney, Eleanor, and Sharon Rady Rolfes. Understanding nutrition. Cengage Learning, 2012.
4. Damodaran, Srinivasan, Kirk Parkin, and Owen R. Fennema (eds.). (2008). Fennema's Food Chemistry, 4th edition. Boca Raton: CRC Press/Taylor & Francis.
5. Newton, David E. (2007). Food Chemistry. New York: Facts on File.
6. Belitz, H.-D., W. Grosch, and Peter Schieberle. (2004). Food Chemistry, 3rd edition. Berlin: Springer

CFD20403 FOOD QUALITY AND SANITATION

To provide students with knowledge of the importance of quality assurance and quality control in food industries, basic quality problems of food products, and knowledge of various quality management system that commonly applied in food industries and to provide students with knowledge on the principles and application of food hygiene in food manufacturing.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the principles, practices and basic quality problems of food products in food industry.
2. Analyze and select the suitable monitoring and control of a process to ensure that it operates at its full potential to produce conforming product based from statistical methods.
3. Explain the principles and applications of food hygiene in food manufacturing, food laws and legislation in sanitation and give presentation in class

References:

1. Medina, D. A. and Laine, A.M. Food Quality: Control, Analysis and Consumer Concerns. Nova Science Publishers. 2011
2. Mark, C. Food Industry Quality Control Systems. CRC Press, 2009
3. Mortimore, S. & Wallace, C. *HACCP: A Practical Approach*, Kluwer Springer Science and Business Media, 2013
4. Hubbard, M. Statistical Quality Control for Food Industry. Springer. 2013
5. Andres, J.V. *Quality Assurance for the Food Industries - A Practical Approach*, CRC Press, 2004.

CFD30003 FOOD ANALYSIS

This course will provide the principles of chemical and instrumental analysis of food and provide laboratory experience for students.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Applying the principles and procedure of chemical, physical and instrumental analysis for the purpose of laboratory analysis of food.
2. Use the knowledge of the course in doing food sampling and food analysis
3. Collaborate with team members in planning, performing and reporting a scientific inquiry/assignment related to food analysis

References:

1. Nollet. L.M.L, (2015) Handbook of Food Analysis, 3rd edition. CRC Press., New York, NY
2. Nielsen. S.S, (2011) Food Analysis, 4th edition. Springer Publishers., New York, NY
3. American Association of Cereal (AACC). (1995). Approved Methods of Analysis, 9th ed. St Paul, MN
4. James, C. S. (1999). Analytical Chemistry of Food. Chapman & Hall
5. Skoog, D.A and West,D.M. (1998). Fundamental of Analytical Chemistry, 4th ed. Holt, Saunders, New York
6. Willard, H.H., Merit, L.L., Dean, J.A., Settle, F.A. (1998). Instrumental Methods of Analysis, 7th ed. Wadsworth Publishing, Belmont, CA
7. Pomeranz and Meloan, (1994). Food Analysis: Theory and Practice. 3rd. ed

CFD30103 FOOD PACKAGING

To provide students with the principles of food packaging and application of packaging materials in food industry as well as packaging regulation and labelling requirement to be in line with Malaysian Food Act 1983 and Food Regulation 1985.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain the function of food packaging and the packaging materials used in food product application.
2. Demonstrate the typical packaging materials testing and some major packaging equipment.
3. Collaborate with team members in reporting the experimental results/assignment given.

References:

1. Robertson, G.L Food Packaging Principle and Practice Third Edition, CRC Press Taylor and Francis Group (2013)
2. Coles, R. McDowell, D. and Kirwan, M.J. Food Packaging Technology, Blackwell Publisher. (2009)
3. Laws of Malaysia: Food Act and Regulations, MDC Publishers Sdn. Bhd. (2015).

CFD30303 SENSORY EVALUATION OF FOOD

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

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply the appropriate techniques and methods of sensory evaluation for product development.
2. Conduct and report results of experiment by using appropriate statistical methods to guide product development and assure quality of food.
3. Discuss with team members in planning and performing sensory test as a project.
4. Describe the principle steps in market research

References:

1. Meilgaard, M.C., Carr, B.T. & Civille, G.V. (2015). *Sensory Evaluation Techniques*, Fifth Edition, CRC Press. ISBN-10: 1482216906 ISBN-13: 978-1482216905
2. Stone, H., Bleibaum, R. and Thomas, H.A. (2012). *Sensory Evaluation Practices*, Fourth Edition (Food Science and Technology), Academic Press. ISBN-10: 0123820863 ISBN-13: 978-0123820860
3. Delarue, J., Lawlor, B. and Rogeaux, M. (2015). *Rapid Sensory Profiling Techniques: Applications in New Product Development and Consumer Research*. Woodhead Publishing Series in Food Science, Technology and Nutrition. ISBN-10: 178242248X ISBN-13: 978-1782422488

PROGRAMME STRUCTURE: *(subject to amendments)*

YEAR 1: SEMESTER 1

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10703	ENGINEERING DRAWING & COMPUTING	3	15	30	36	9	30	120
2	WED10402	COMPETENCY ENGLISH	2	14	14	0	5	47	80
3	MPU 2313 MPU 2323	AMALAN ISLAM DI MALAYSIA (LOCAL MUSLIM) RELIGIOUS PRACTICES IN MALAYSIA (LOCAL NON MUSLIM & INT.)	3	17	0	0	34	69	120
4	WQD10103	TECHNICAL MATHEMATICS 1	3	34	17	0	6	63	120
5	CLD10003	GENERAL CHEMISTRY	3	17	11	47	7	38	120
6	WMD10101	MANDARIN 1	1	21	0	0	4	25	50
7	MPU24*2	CO-CURRICULUM	2						80
TOTAL			17	118	72	83	65	272	690

YEAR 1: SEMESTER 2

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10803	ORGANIC & ANALYTICAL CHEMISTRY	3	34	0	36	7	43	120
2	CLD10502	PRINCIPLES OF CHEMICAL PROCESS	2	14	13	17	4	32	80
3	WED20202	COMMUNICATION ENGLISH 1	2	13	13	0	3	51	80
4	CLD20102	ELECTRICAL TECHNOLOGY	2	14	0	22	5	39	80
5	CLD10603	FLUID MECHANICS	3	15	20	36	4	45	120
6	MPU2232	INTERPERSONAL SKILLS	2	17	0	0	25	78	120
7	WQD10203	TECHNICAL MATHEMATICS 2	3	34	17	0	6	63	120
TOTAL			17	141	63	111	54	351	720

YEAR 2: SEMESTER 3

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD20002	OCCUPATIONAL SAFETY AND HEALTH	2	14	12	0	6	48	80
2	WMD10201	MANDARIN 2	1	21	0	0	4	25	50
3	CLD20202	PROCESS INSTRUMENTATION	2	14	0	25	4	37	80
4	MPU2163 MPU2143	PENGAJIAN MALAYSIA 2 (LOCAL)/ BAHASA MELAYU KOMUNIKASI 1 (INT)	3	17	0	0	25	78	120
5	CLD20302	THERMODYNAMICS	2	14	22	7	6	31	80
6	CLD20402	TRANSPORT PROCESS	2	15	0	33	4	28	80
7	CLD20502	BASIC ENGINEERING WORKSHOP	2	17	0	33	3	27	80
8	WBD10102	INTRODUCTION TO ENTREPRENEURSHIP	2	17	28	0	6	29	80
9	WED20302	COMMUNICATION ENGLISH 2	2	13	13	0	3	51	80
TOTAL			18	142	75	98	61	354	730

YEAR 2: SEMESTER 4

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD21002	STATISTICS	2	15	22	0	5	38	80
2	CFD 20302	FOOD CHEMISTRY	2	30	0	12	6	32	80
3	CKD20102	SEPARATION TECHNOLOGY	2	12	0	16	5	47	80
4	CKD20003	REACTOR TECHNOLOGY	3	14	11	29	7	59	120
5	CFD20203	FOOD MICROBIOLOGY	3	28	0	36	6	50	120
6	CFD30303	SENSORY EVALUATION OF FOOD	3	30	0	45	6	39	120
7	CFD20403	FOOD QUALITY AND SANITATION	3	38	0	6	8	68	120
TOTAL			18	167	33	144	43	333	720

YEAR 3: SEMESTER 5

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CFD 30003	FOOD ANALYSIS	3	28	0	42	7	43	120
2	CFD 20103	FOOD PROCESSING TECHNOLOGY	3	28	0	42	7	43	120
3	CFD 30103	FOOD PACKAGING	3	34	0	49	4	33	120
4	CPD39806	FINAL YEAR PROJECT	6	5	0	195	1	39	240
TOTAL			15	95	0	328	19	158	600

YEAR 3: SEMESTER 6

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WID41009	INDUSTRIAL TRAINING	9	0	0	320	4	36	360
TOTAL			9	0	0	320	4	36	360

Total Credit to Graduate (TCG): 94

*** Applicable for Malaysian Students**

Students must register and pass subject MPU3213 Bahasa Kebangsaan A before graduation if attain grade D and E in Bahasa Melayu at SPM level and never passed Bahasa Kebangsaan A in their previous programme. Other conditions: refer to your Academic Advisor. Students under this category will graduate with additional of 3 credits on top of TCG.

* Passing mark for all MPU Compulsory subjects is 50 marks (C).

Co-Curriculum Courses

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU2412	CAREER GUIDANCE 1	2	17	0	0	18	45	80
2	MPU2422	COMMUNITY SERVICE 1	2	17	0	0	9	54	80
3	MPU2442	RAKAN MASJID 1	2	17	0	10	1	52	80
4	MPU2452	SISWA-SISWI BOMABA & PENYELAMAT 1	2	17	0	25	0	38	80
5	MPU2462	SISWA-SISWI PERTAHANAN AWAM	2	17	0	16	0	47	80
6	MPU2472	SPORTS MANAGEMENT 1	2	17	0	9	8	46	80
7	MPU2482	PERSONAL FINANCIAL MANAGEMENT 1	2	17	0	18	3	42	80
8	MPU2432	CULTURE 1	2	17	0	23	0	40	80

DIPLOMA IN CHEMICAL ENGINEERING TECHNOLOGY (ENVIRONMENT)

R/524/4/0037 / MQA 10856

PROGRAMME OVERVIEW

An environmental engineer/technologist/scientist works very closely with industries and companies to ensure that they are compliance with all environmental regulations and laws. In addition to just working to ensure compliance, an environmental engineer/technologist/scientist also works with the company to develop less costly methods of productions that will still be effective and within regulations, including designing, control and finding a remedy to environmental health hazards. The job involves identifying sources of pollution, determining citizen/customer requirements, preparing reports, recommending corrective actions and presenting information at hearings. This function is very important for companies as decreasing the cost of production is important in overall revenue for the company.

An environmental engineer/technologist/scientist spends a considerable amount of time keeping up-to-date with current changes to environmental regulations and codes. He or she must also be familiar with current trends in businesses and solutions that other industries are using to remain within requirements while decreasing production costs. Attending seminars, workshops and ongoing training is important for an environmental engineer. an environmental engineer/technologist/scientist must also be able to effectively communicate information to management teams within the various industries and help them establish plans to include new, environmentally friendly way of increasing production and decreasing costs.

The programme also involves water and air pollution control, recycling, waste disposal, and public health issues.

CAREER PATH

Graduates from this programme conduct hazardous-waste management studies to evaluate the significance of such hazards, advice on treatment and containment and develop regulations to prevent mishaps.

COURSES

**Diploma in Chemical Engineering Technology
(Environment)**

CED20004 ENVIRONMENTAL SCIENCE

CED20102 NOISE CONTROL TECHNOLOGY

CED30003 WASTEWATER TREATMENT TECHNOLOGY

CED30102 WATER TREATMENT TECHNOLOGY

CED30203 ENVIRONMENTAL MANAGEMENT SYSTEM

**CED30303 SOLID AND HAZARDOUS WASTE
MANAGEMENT**

CED30403 AIR POLLUTION CONTROL TECHNOLOGY

CED20004 ENVIRONMENTAL SCIENCE

This course is designed to provide students with basic knowledge of environmental science, technology and engineering. These include the basic principles of natural system of the environment, the potential pollution and toxin including hazardous and non-hazardous waste. Furthermore, it will also equip students with sufficient analytical skills of environmental science experiments as well as good management practices in laboratory.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the concept of environmental science to the actual environmental problems.
2. Suggest the prevention method or technology that can be used to control the impact of the pollution.
3. Conduct experiments on water pollution
4. Able to communicate and deliver in effective ways

References:

1. Vesilind, P.A., Morgan, S.M., Heine, L.G. (2010) Introduction to Environmental Engineering, Cengage Learning.
2. Hammer MJ. (2004). *Water and Wastewater Technology*. (5th Edition). Prentice Hall
3. Sawyer CN. McCarty PL. & Parkin GF. (2003). *Chemistry for Environmental Engineering and Science*. (5th Edition). McGraw Hill

CED20102 NOISE CONTROL TECHNOLOGY

To provide students with strong fundamental knowledge of noise control technology.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyze the concept and effect of environmental noise
2. Report the purpose of conducting noise survey, monitoring and sampling.
3. State the noise control principles in noise control technology.
4. Ability to find and manage the information from the relevance sources.

References:

1. David AB., Colin HH. (2003). Engineering Noise Control: Theory & Practice (3rd edition). Taylor & Francis Group
2. Corbitt RA. (1999). Standard Handbook of Environmental Engineering (2nd edition). McGraw Hill.
3. Saenz AL., Stephens RWB. (1986). Noise pollution: Effects and Control. John Wiley & Sons
4. Fahy J., Walker J. (1998). *Fundamental of Noise & Vibration*. E & F N Spon
5. Hansen CH. (2001). *Understanding Active Noise Control*. E & F N Spon
6. Orr G. (2001). Handbook of Industrial Noise Control
7. Berendt RD. (1999). *Quieting: A Practical Guide to Noise Control*. CRC Press – Lewis

CED30003 WASTEWATER TREATMENT TECHNOLOGY

To make the students knowledgeable on the technologies available in removing and treating water pollutants for wastewater treatment.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Identify of sources of pollutant, critical parameter and the process involved in wastewater treatment.
2. Construct of sludge treatment, handling and disposal methods as a final product of wastewater.
3. Justify the advanced treatment in wastewater technology being applied in wastewater technology based on performance and cost-effectiveness.

References:

1. Metcalf & Eddy. (1991). *Wastewater Engineering: Treatment, Reuse and Disposal*. (3rd edition). McGraw Hill
2. Hammer MJ. (2004). *Water and Wastewater Technology*. 5th edition. Prentice Hall
3. Masters GM. (1998). *Introduction to Environmental Engineering and Science*. Prentice-Hall
4. Eckenfelder WW. (1998). *Industrial Water Pollution Control*. 3rd edition. McGraw-Hill College
5. Masters GM. (1998). *Introduction to Environmental Engineering and Science*. Prentice-Hall
6. Henry JG & Henkie GW. (1998). *Environmental Science & Engineering*. Prentice Hall, Eaglewood Cliffs

CED30102 WATER TREATMENT TECHNOLOGY

This course is aimed to provide student with strong fundamental knowledge of water treatment techniques and design the engineering technology of water treatment technique

Learning Outcomes:

Upon completion of this course students should be able to:

1. Differentiate the types of water treatment and monitoring techniques.
2. Demonstrate experiments related to water treatment technology by following standard operating procedure and safety awareness.
3. Show the basic design of water treatment technology which water EQA 1974 Compliant.
4. Ability to communicate and deliver in effective ways.

References:

1. Metcalf & Eddy. (1991). *Wastewater Engineering: Treatment, Reuse and Disposal*. (3rd edition). McGraw Hill.
2. Masters GM. (1998). *Introduction to Environmental Engineering and Science*. Prentice-Hall.
3. Henry JG & Henkie GW. (1998). *Environmental Science & Engineering*. Prentice Hall, Eaglewood Cliffs
4. Hammer MJ. (2004). *Water and Wastewater Technology*. (5th edition). Prentice Hall
5. Colin FP. (1998). *Monitoring of Water Quality*. Elsevier Science
6. Eckenfelder WW. (1999). *Industrial Water Pollution Control*. (3rd edition). McGraw-Hill
7. Sawyer CN, McCarty PL, Parkin GF. (2003). *Chemistry for Environmental Engineering and Science*. (5th edition). McGraw Hill
8. Tchobanoglous G., & Burton FL. (1991). *Wastewater Engineering: Treatment, Disposal and Reuse*. (3rd edition). McGraw Hill.

CED30203 ENVIRONMENTAL MANAGEMENT SYSTEM

To provide essential information to the students on the tools available, especially the ISO 14000 and Environmental Impact Assessment (EIA), towards sustainable development

Learning Outcomes:

Upon completion of this course students should be able to:

1. Describe the concept of environmental management system and how it's being used in managing environmental issues.
2. Select the approaches/methods of EMS used in managing (controlling) the pollution and waste.
3. State the basic EIA procedures

References:

1. Malaysian Standards Handbook on Environmental Management "MS ISO 14000 Series 2nd Ed" 2004
2. Engineering Green Chemical Processes McGraw Hill. ISBN 9780071826686
3. Green IT : Reduce your Information Systems Environmental Impact while

CED30303 SOLID AND HAZARDOUS WASTE MANAGEMENT

This course will equip students with the fundamental knowledge in Municipal Solid Waste (MSW) and Hazardous Waste Management (HWM) from municipality as well as from industry for the preparation of students towards multidisciplinary working environment. It will introduce student to the various level and aspects of Solid Waste and Hazardous Waste Management. These include basic principles in characterization, handling, collection, processing, 3Rs, source reduction, treatment and remediation of wastes. The provided knowledge and skills will then help student to implement in problem solving.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Infer the basic principles of waste management, processing methods, 3Rs, treatment, disposal, remedial action and current issues related to solid and hazardous waste management.
2. Suggest the correct method in liquid and solid state of waste treatment. (CTPS)
3. Identify the remedial actions for treatment and disposal facilities.

References:

1. Bahadori, A. (2013). *Waste Management in the Chemical and Petroleum Industries*. Wiley
2. Tchobanoglous G., Theisen H., Vigil SA. (1993). *Integrated Solid Waste Management*. (Edition) McGrawHill Publisher.
3. LaGrega MD., Buckingham PL., Evans JC. (2001) *Hazardous Waste Management*, McGraw-Hill
4. Vesilind, P.A., Morgan, S.M., Heine, L.G. (2010) *Introduction to Environmental Engineering*, Cengage Learning
5. Vesilind, P.A., (2002). *Solid Waste Engineering*, Thomson Learning

CED30403 AIR POLLUTION CONTROL TECHNOLOGY

To provide students with strong fundamental knowledge of the sources of air pollution, air pollution control techniques, air pollution monitoring and parameters addressed in Clean Air Regulation under EQA 1974 and Industry Code of Practice on Indoor Air Quality

Learning Outcomes:

Upon completion of this course students should be able to:

1. Identify the sources of air pollution and able to evaluate the requirement of Malaysian laws related to air quality control and air pollution monitoring
2. Differentiate the types of air quality control and monitoring techniques and analyse the factors that would affect the efficiency of the equipment in terms of performance and cost effectiveness
3. Demonstrate good communication, teamwork, leadership, problem solving and lifelong learning

References:

1. Noel, D.N. (1994). *Air Pollution Control Engineering*. McGraw-Hill
2. Masters, G.M. (1998). *Introduction to Environmental Engineering and Science*. Prentice-Hall
3. Purver, D. (1997). *Fundamental Aspects of Pollution Control and Environment*. Elsevier, London
4. Davis, C. (1998). *Introduction to Environmental Engineering*. 3rd edition. McGraw Hill

PROGRAMME STRUCTURE: *(subject to amendments)*

YEAR 1: SEMESTER 1

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10703	ENGINEERING DRAWING & COMPUTING	3	15	30	36	9	30	120
2	WED10402	COMPETENCY ENGLISH	2	14	14	0	5	47	80
3	MPU 2313 MPU 2323	AMALAN ISLAM DI MALAYSIA (LOCAL MUSLIM) RELIGIOUS PRACTICES IN MALAYSIA (LOCAL NON MUSLIM & INT.)	3	17	0	0	34	69	120
4	WQD10103	TECHNICAL MATHEMATICS 1	3	34	17	0	6	63	120
5	CLD10003	GENERAL CHEMISTRY	3	17	11	47	7	38	120
6	WMD10101	MANDARIN 1	1	21	0	0	4	25	50
7	MPU24*2	CO-CURRICULUM	2						80
TOTAL			17	118	72	83	65	272	690

YEAR 1: SEMESTER 2

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10803	ORGANIC & ANALYTICAL CHEMISTRY	3	34	0	36	7	43	120
2	CLD10502	PRINCIPLES OF CHEMICAL PROCESS	2	14	13	17	4	32	80
3	WED20202	COMMUNICATION ENGLISH 1	2	13	13	0	3	51	80
4	CLD20102	ELECTRICAL TECHNOLOGY	2	14	0	22	5	39	80
5	CLD10603	FLUID MECHANICS	3	15	20	36	4	45	120
6	MPU2232	INTERPERSONAL SKILLS	2	17	0	0	25	78	120
7	WQD10203	TECHNICAL MATHEMATICS 2	3	34	17	0	6	63	120
TOTAL			17	141	63	111	54	351	720

YEAR 2: SEMESTER 3

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD20002	OCCUPATIONAL SAFETY AND HEALTH	2	14	12	0	6	48	80
2	WMD10201	MANDARIN 2	1	21	0	0	4	25	50
3	CLD20202	PROCESS INSTRUMENTATION	2	14	0	25	4	37	80
4	MPU2163 MPU2133	PENGAJIAN MALAYSIA 2 (LOCAL) BAHASA MELAYU KOMUNIKASI 1 (INT)	3	17	0	0	25	78	120
5	CLD20302	THERMODYNAMICS	2	14	22	7	6	31	80
6	CLD20402	TRANSPORT PROCESS	2	15	0	33	4	28	80
7	CLD20502	BASIC ENGINEERING WORKSHOP	2	17	0	33	3	27	80
8	WBD10102	INTRODUCTION TO ENTREPRENEURSHIP	2	17	28	0	6	29	80
9	WED20302	COMMUNICATION ENGLISH 2	2	13	13	0	3	51	80
TOTAL			18	142	75	98	61	354	730

YEAR 2: SEMESTER 4

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CKD20003	REACTOR TECHNOLOGY	3	14	11	29	7	59	120
2	CLD21002	STATISTICS	2	15	22	0	5	38	80
3	CKD20102	SEPARATION TECHNOLOGY	2	12	0	16	5	47	80
4	CED30303	SOLID AND HAZARDOUS WASTE MANAGEMENT	3	22	0	43	9	46	120
5	CED20004	ENVIRONMENTAL SCIENCE	4	45	0	55	0	60	160
6	CED30102	WATER TREATMENT TECHNOLOGY	2	16	0	39	4	21	80
7	CED 20102	NOISE CONTROL TECHNOLOGY	2	16	0	39	4	21	80
TOTAL			18	140	33	221	34	292	720

YEAR 3: SEMESTER 5

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CED30003	WASTEWATER TREATMENT TECHNOLOGY	3	26	0	53	10	31	120
2	CED30203	ENVIRONMENTAL MANAGEMENT SYSTEM	3	32	0	38	12	38	120
3	CED30403	AIR POLLUTION CONTROL TECHNOLOGY	3	22	0	39	4	55	120
4	CPD39806	FINAL YEAR PROJECT	6	5	0	195	1	39	240
TOTAL			15	85	0	325	27	163	600

YEAR 3: SEMESTER 6

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WID41009	INDUSTRIAL TRAINING	9	0	0	320	4	36	360
TOTAL			9	0	0	320	4	36	360

Total Credit to Graduate (TCG): 94

*** Applicable for Malaysian Students**

Students must register and pass subject MPU3213 Bahasa Kebangsaan A before graduation if attain grade D and E in Bahasa Melayu at SPM level and never passed Bahasa Kebangsaan A in their previous programme. Other conditions: refer to your Academic Advisor. Students under this category will graduate with additional of 3 credits on top of TCG.

* Passing mark for all MPU Compulsory subjects is 50 marks (C).

Co-Curriculum Courses

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU2412	CAREER GUIDANCE 1	2	17	0	0	18	45	80
2	MPU2422	COMMUNITY SERVICE 1	2	17	0	0	9	54	80
3	MPU2442	RAKAN MASJID 1	2	17	0	10	1	52	80
4	MPU2452	SISWA-SISWI BOMABA & PENYELAMAT 1	2	17	0	25	0	38	80
5	MPU2462	SISWA-SISWI PERTAHANAN AWAM	2	17	0	16	0	47	80
6	MPU2472	SPORTS MANAGEMENT 1	2	17	0	9	8	46	80
7	MPU2482	PERSONAL FINANCIAL MANAGEMENT 1	2	17	0	18	3	42	80
8	MPU2432	CULTURE 1	2	17	0	23	0	40	80

DIPLOMA IN CHEMICAL ENGINEERING TECHNOLOGY (BIOPROCESS)

R/524/4/0034 / MQA 10853

PROGRAMME OVERVIEW

Bioprocess is the sub-discipline within biotechnology that is responsible for translating the discoveries of life science into practical products, processes or systems that can serve the needs of society. Bioprocess operations make use of microbial, animal and plant cells and components of cells such as enzymes to manufacture new products and destroy harmful wastes.

The use of microorganisms to transform biological materials for the production of fermented foods has its origins in antiquity. Since then, bioprocesses have been developed for an enormous range of commercial products, from relatively cheap materials such as industrial alcohol and organic solvents, to expensive specialty such as antibiotics, therapeutic proteins and vaccines. Industrially-useful enzymes and living cells such as baker's and brewer's yeast are also commercial products of bioprocessing.

Many positions are currently going unfilled nationwide because the industry cannot find enough technicians to fill their job openings. Opportunities for advancement in the field of biotechnology are excellent for those who keep abreast with the rapid changes occurring in the field. Employees who are curious, investigate and adaptable in their attitudes quickly become more valuable and earn higher salaries, while those who content to ride on their education may soon find that their skills and knowledge are out of date and out of demand. Bioprocess/Biosystems technicians sometimes advance to supervisory or management positions if they show themselves to be highly effective, organized and skilled in supervisory task as well. Technicians who wish to advance should look upon their technical educations as a springboard for continued learning.

CAREER PATH

A chemical engineering technology in Bioprocess from Unkl MICET provides an individual with a solid technical and design foundation combined with strong analytical, problem-solving and communication skills valued across a range of industries such as food and beverages, pharmaceuticals, beauty products, research and development and petroleum. Some of our graduates choose alternative career pathways such as:

- Laboratory assistant
- (QC) & (QA)
- Production executive
- Safety Management Officer
- Assistant Chemical Engineer

COURSES

**Diploma in Chemical Engineering Technology
(Bioprocess)**

**CBD20003 INTRODUCTION TO BIOPROCESS
TECHNOLOGY**

CBD20203 PRINCIPLES OF MICROBIOLOGY

CBD30003 ANALYTICAL METHODS IN BIOPROCESSING

CBD30102 BIOPRODUCT PROCESS DEVELOPMENT

CBD30203 TECHNIQUES IN BIOPRODUCT RECOVERY

CBD30403 BIOPROCESS PLANT AND EQUIPMENT

CBD30503 QUALITY ASSURANCE & QUALITY CONTROL

CBD20003 INTRODUCTION TO BIOPROCESS TECHNOLOGY

This course will provide sufficient understanding on the fundamentals of 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. Explain the scopes and application of bioprocess technology in various research area.
2. Demonstrate skills of performing the fermentation processes by using bioreactors.
3. Display ability to work in team either as a leader or ordinary member (A2)

References:

1. Doran P.M. (2013). Bioprocess Engineering Principles (2nd ed). Academic Press, Harcourt Brace & Company (TP248.3.D67 2013 (2nd ed))
2. Shuler N.L. and Kargi F. (2009). Bioprocess Engineering Basic Concepts (2nd ed). Prentice Hall, Pearson Education International. (TP248.3.S58 2009 / TP248.3.S58 2002 (2nd ed))
3. El-Mansi E.M.T., Bryce C.F.A., Demain A.L. and Allman A.R. (2012). Fermentation Microbiology and Biotechnology (3rd ed). CRC Press, Taylor & Francis Group. (TP248.27.M53 F467 2012)
4. Ratledge C. and Kristiansen B. (2006). Basic Biotechnology (3rd ed). Cambridge University Press. (TP248.2.B37 2006)
5. Doble M., Kruthiventi A.K. and Gaikar V.G. (2004). Biotransformation and Bioprocesses. Marcel Dekker Inc. (TP248.2.B37 2006)
6. Ibrahim Che Omar (2002). Prinsip Bioteknologi. Penerbit USM. (TP248.24.127 2002)

CBD20203 PRINCIPLES OF MICROBIOLOGY

To introduce the fundamental function, structure and classification of microorganism and the application of microorganism in industries.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Distinguish microorganism through its principles and characterization
2. Perform laboratory works related to microbiological techniques.
3. Discuss the implementation of microbial technology in bioprocess industry through communication and presentation

References:

1. Nester, E.W., Anderson, D.G., Roberts Jr., C.E. and Nester, M.T. (2007). Microbiology: A Human Perspective. 5th ed. Published by McGraw-Hill. NY, USA (MAIN REF) QR 41.2. M385 2007 (5th ed)
2. Brown, A. and Smith, H. (2012). Benson's Microbiological Applications: Laboratory Manual in General Microbiology. 13th ed. Mc-Graw-Hill, NY, USA (MAIN REF) QR 63.B76 2012 (13th ed)
3. Willey, J.M., Sherwood, L.M. and Woolverton, C.J. (2008). Prescott, Harley and Klein's Microbiology. 7th ed. McGraw-Hill. NY, USA. QR 41.2. P74 2008 (7th ed)
4. Cappuccino, J.G. and Sherman, N. (2011). Microbiology: A Laboratory Manual. 9th ed. Pearson Education Inc. USA. QR 63. C37 2011 (9th ed)

CBD30003 ANALYTICAL METHODS IN BIOPROCESSING

To provide the students with the fundamentals of biological materials, the current and innovative technology in the processing of biological products locally and worldwide.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Explain general knowledge, characteristic and properties of biological material.
2. Show ability to identify problems, and solve using source of biological material principles.
3. Acquire knowledge and skills for lifelong learning

References:

1. Moran, L.A., Horton, H.R., Scrimgeour, K.G. and Perry, M.D. (2012). Principles of Biochemistry. 5th ed. Pearson Education Inc. USA (MAIN REF) QP 514.2 P75 2012 (5th ed)
2. Alan Gabelman (1994). Bioprocess production of flavor, fragrance, and color ingredients. John Wiley & Sons (MAIN REF, no recent edition). TP418 .B565 1994
3. Bioprocess Engineering: Basic Concepts, Kargi, F, Prentice Hall. (2009) TP248.3 .S58 2009

CBD30102 BIOPRODUCT PROCESS DEVELOPMENT

To provide students with the knowledge in the process of developing and validation of new bioproducts as accordance to the required standards.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Discuss general knowledge to develop bioproducts using suitable processes.
2. Apply techniques for bioproduct development and analysis.
3. Collaborate with team members on a real case study of product development and its marketing strategies

References:

1. Michael L. Shuler, Fikret Kargi (2002) Bioprocess engineering basic concepts. (2nd edition) Upper Saddle River, NJ: Prentice Hall. (MAIN REF) TP248.3 .S58 2002 (2nd ed)
2. Pauline M. Doran (2013) Bioprocess engineering principles. (2nd edition). Waltham, MA: Focal Press. TP248.3 .D67 2013
3. Nisbet, L.J. and Winstanley, D.J. (1997). Bioactive microbial products 2: Development and production. California: Academic Press

CBD30203 TECHNIQUES IN BIOPRODUCT RECOVERY

The students should be able to define and apply various techniques in bioproduct recovery techniques

Learning Outcomes:

Upon completion of this course students should be able to:

1. Apply the appropriate techniques in bioproduct recovery stages.
2. Perform the operation in downstream processing.
3. Discuss the knowledge and techniques in bioproduct recovery to meet the desired needs of society

References:

1. Sivasankar B. (2005). Bioseparations Principles and Techniques. Prentice Hall of India Private Limited (MAIN REF) TP248.25.S47 S58 2005
2. Shuler N.L. and Kargi F. (2009). Bioprocess Engineering Basic Concepts (2nd ed). Prentice Hall, Pearson Education International (MAIN REF) TP248.3.S58 2009 / TP248.3.S58 2002 (2nd ed)
3. Doran P.M. (2013). Bioprocess Engineering Principles (2nd ed). Academic Press, Harcourt Brace & Company TP248.3.D67 2013 (2nd ed)
4. Ratledge C. and Kristiansen B. (2006). Basic Biotechnology (3rd ed). Cambridge University Press TP248.2.B37 2006 (3rd ed)
5. Doble M., Kruthiventi A.K. and Gaikar V.G. (2004). Biotransformations and Bioprocesses. Marcel Dekker Inc. TP248.25.B55 D63 2004

CBD30403 BIOPROCESS PLANT AND EQUIPMENT

To expose students to the various types of equipment used in bioprocess industries and their special requirements.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Classify types of equipment used in bioprocess industries and its requirements.
2. Perform the operation in bioprocess equipment and utilities.
3. Describe the equipment in bioprocessing plants that meets environmental sustainability.

References:

1. Bioprocess Engineering: System, Equipment and Facilities, Lydersen, B.K., Elia, N.A.D. & Nelson, K.L., John Wiley & Sons, Inc. (1994). (MAIN REF) TP248.3 .B56 1994
2. Bioprocess Engineering Principles, Doran, P.M. Academic Press, Harcourt Brace & Company (2013). TP248.3 .D67 2013
3. Shuler, M.L & Kargi, F. (2009). Bioprocess Engineering: Basic Concepts. New Delhi: PHI Learning Private Limited. (MAIN REF) TP248.3 .S58 2009 TP248.3 .S58 2002
4. Harrison, R. G., Todd, P., Rudge, S. R. & Petrides, D. P. (2003). Bioseparations Science and Engineering. New York: Oxford University Press. TP248.25.S47 B55 2003

CBD30503 QUALITY ASSURANCE & QUALITY CONTROL

To introduce the principle and practices in the implementation of quality assurance program, various aspects of basic quality problem involved, different control exercises and techniques used in assessing quality of products.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Determine the related quality assurance programme in bioprocess industry and its implementation.
2. Demonstrate the skills of performing analysis for quality control of selected bioproduct
3. Justify the importance of quality assurance and quality control to ensure ethical production of bioproducts.

References:

1. Badiru, A.B. (1995). *Industry's Guide to ISO 9000*. Wiley & Sons. TS156.6 .B33 1995
2. Forsythe, S.J. (2010). *Food Hygiene. Microbiology and HACCP*, PR Hayes Chapman & Hall. TX537 F67 2010
3. Malaysian standards handbook quality management MS ISO 9000 series / Sirim Berhad. (2005). TA368 .S57 2005
4. Bissell, D. (1994). *Statistical Methods for SPC and TQM*, Chapman & Hall TS156.8 .B514 1994
5. Joseph D. Nally.2007.Good manufacturing practices for pharmaceuticals. RS189 .G66 2007

PROGRAMME STRUCTURE: *(subject to amendments)*

YEAR 1: SEMESTER 1

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10703	ENGINEERING DRAWING & COMPUTING	3	12	0	66	10	32	120
2	WED10402	COMPETENCY ENGLISH	2	14	14	0	5	47	80
3	MPU 2313 MPU 2323	AMALAN ISLAM DI MALAYSIA (LOCAL MUSLIM) RELIGIOUS PRACTICES IN MALAYSIA (LOCAL NON MUSLIM & INT.)	3	17	0	0	34	69	120
4	WQD10103	TECHNICAL MATHEMATICS 1	3	34	17	0	6	63	120
5	CLD10003	GENERAL CHEMISTRY	3	17	11	47	7	38	120
6	WMD10101	MANDARIN 1	1	21	0	0	4	25	50
7	MPU 24*2	CO-CURRICULUM	2	0	0	0	0	0	80
TOTAL			17	115	42	113	66	274	690

YEAR 1: SEMESTER 2

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10803	ORGANIC & ANALYTICAL CHEMISTRY	3	34	0	36	7	43	120
2	CLD10502	PRINCIPLES OF CHEMICAL PROCESS	2	14	13	17	4	32	80
3	WED20202	COMMUNICATION ENGLISH 1	2	13	13	0	3	51	80
4	CLD20102	ELECTRICAL TECHNOLOGY	2	14	0	22	5	39	80
5	CLD10603	FLUID MECHANICS	3	15	20	36	4	45	120
6	MPU2232	INTERPERSONAL SKILLS	2	17	0	0	25	78	120
7	WQD10203	TECHNICAL MATHEMATICS 2	3	34	17	0	6	63	120
TOTAL			17	141	63	111	54	351	720

YEAR 2: SEMESTER 3

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD20002	OCCUPATIONAL SAFETY AND HEALTH	2	14	12	0	6	48	80
2	WED20302	COMMUNICATION ENGLISH 2	2	13	13	0	3	51	80
3	WMD10201	MANDARIN 2	1	21	0	0	4	25	50
4	CLD20202	PROCESS INSTRUMENTATION	2	14	0	25	4	37	80
5	CLD20302	THERMODYNAMICS	2	14	22	7	6	31	80
6	MPU2163/MPU 2133	PENGAJIAN MALAYSIA 2 (LOCAL)/ BAHASA MELAYU KOMUNIKASI 1 (INT)	3	17	0	0	25	78	120
7	WBD10102	INTRODUCTION TO ENTREPRENEURSHIP	2	17	28	0	6	29	80
8	CLD20402	TRANSPORT PROCESS	2	15	0	33	4	28	80
9	CLD20502	BASIC ENGINEERING WORKSHOP	2	17	0	33	3	27	80
TOTAL			18	142	75	98	61	354	730

YEAR 2: SEMESTER 4

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CKD20003	REACTOR TECHNOLOGY	3	22	0	33	5	60	120
2	CLD21002	STATISTICS	2	15	22	0	5	38	80
3	CBD20003	INTRODUCTION TO BIOPROCESS TECHNOLOGY	3	29	0	57	3	31	120
4	CBD20203	PRINCIPLES OF MICROBIOLOGY	3	31	0	51	3	35	120
5	CBD30003	ANALYTICAL METHODS IN BIOPROCESSING	3	34	0	51	3	32	120
6	CBD30102	BIOPRODUCT PROCESS DEVELOPMENT	2	12	0	24	4	40	80
7	CKD20102	SEPARATION TECHNOLOGY	2	12	0	16	5	47	80
TOTAL			18	155	22	232	28	283	720

YEAR 3: SEMESTER 5

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CBD 30503	QUALITY ASSURANCE & QUALITY CONTROL	3	19	0	49	15	37	120
2	CBD 30203	TECHNIQUES IN BIOPRODUCT RECOVERY	3	32	0	46	3	39	120
3	CBD 30403	BIOPROCESS PLANT & EQUIPMENT	3	29	0	51	4	36	120
4	CPD 39806	FINAL YEAR PROJECT	6	5	0	195	1	39	240
TOTAL			15	85	0	341	23	151	600

YEAR 3: SEMESTER 6

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WID41009	INDUSTRIAL TRAINING	9	0	0	320	4	36	360
TOTAL			9	0	0	320	4	36	360

Total Credit to Graduate (TCG): 94

*** Applicable for Malaysian Students**

Students must register and pass subject MPU3213 Bahasa Kebangsaan A before graduation if attain grade D and E in Bahasa Melayu at SPM level and never passed Bahasa Kebangsaan A in their previous programme. Other conditions: refer to your Academic Advisor. Students under this category will graduate with additional of 3 credits on top of TCG.

* Passing mark for all MPU Compulsory subjects is 50 marks (C).

Co-Curriculum Courses

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU2412	CAREER GUIDANCE 1	2	17	0	0	18	45	80
2	MPU2422	COMMUNITY SERVICE 1	2	17	0	0	9	54	80
3	MPU2442	RAKAN MASJID 1	2	17	0	10	1	52	80
4	MPU2452	SISWA-SISWI BOMABA & PENYELAMAT 1	2	17	0	25	0	38	80
5	MPU2462	SISWA-SISWI PERTAHANAN AWAM	2	17	0	16	0	47	80
6	MPU2472	SPORTS MANAGEMENT 1	2	17	0	9	8	46	80
7	MPU2482	PERSONAL FINANCIAL MANAGEMENT 1	2	17	0	18	3	42	80
8	MPU2432	CULTURE 1	2	17	0	23	0	40	80

DIPLOMA IN CHEMICAL ENGINEERING TECHNOLOGY (POLYMER)

R/524/4/0036 / MQA 10855

PROGRAMME OVERVIEW

Our Diploma in Chemical Engineering Technology (Polymer) is an MQA accredited programme consisting of strong polymeric fundamental background delivery complete with fachuselor “hands-on” approach in chemical engineering and polymer technology. This extensive array of industrial-size polymer processing equipment, modern laboratories facilities and a comprehensive curriculum that balances classroom and hands-on time. This three-year programme will allow students to focus on basic chemical engineering knowledge as well as specializing in plastics processing, rubber and latex technology, composite manufacturing as well as polymer preparation, testing and characterization knowhow. The emphasis given is mainly on providing students with the ability to compete and adapt fast with the changing environment in the working world of polymer industry at later stage.

CAREER PATH

The skilled graduates can seek career in the upstream and downstream polymer industries such as the polymerization plants, petrochemical industries (Link 2, Petronas) plastic industries (Link 1 & Link 2, Link 3), rubber industries (Link 1, Link 2), latex industries (Link 1 & Link 2, Link 3), composite industries, automotive industries, electronic industries, medical industries, pharmaceutical industries, aerospace industries, paint industries, textile industries etc. Graduates also had wide career advancement in area of design, consultation, R & D, education as well in research institutes such as RRI, SIRIM and MINT.

COURSES

**Diploma in Chemical Engineering Technology
(Polymer)**

**CRD20003 INTRODUCTION TO POLYMER SCIENCE AND
TECHNOLOGY**

CRD20204 PLASTICS PROCESSING

CRD20104 LATEX SCIENCE & TECHNOLOGY

CRD30003 COMPOSITE TECHNOLOGY

CRD30703 POLYMER SYNTHESIS

CRD20003 INTRODUCTION TO POLYMER SCIENCE AND TECHNOLOGY

This is an introductory course aimed at providing students with the fundamental principles of polymeric materials; the various polymerization mechanism and methods; common commercial rubbers, plastics, thermoplastic elastomers and their applications as well as composites and their manufacturing techniques. These fundamentals are essential since the students will encounter these concepts in subsequent semesters and the applications thereof.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyze the components, characteristics, manufacturing techniques and applications of rubber, plastics, thermoplastic, thermoplastic elastomer and composites.
2. Differentiate between polymerization types and polymerization techniques with respect to their mechanism and methods.
3. Demonstrate role either as a leader or team member in assignment work.

References:

1. Young R. M. and Lovell P. A. (2011). *Introduction to Polymers*. 3rd^d Ed., CRC Press
2. Charles E. Carraher, Jr. (2013). *Introduction to Polymer Chemistry*, 3rd Ed. CRC Press
3. Billmeyer F.W. (2007). *Textbook of Polymer Science*, 3rd Ed. Wiley Interscience
4. Sperling. L.H. (2006). *Introduction to Physical Polymer Chemistry*. 4th Ed. Wiley Interscience
5. James E. Mark, Burak Erman, Frederick R. Eirich (2013). *Science and Technology of Rubber*, (4th Edition), Academic Press

CRD20104 LATEX SCIENCE & TECHNOLOGY

This is an elementary course aimed at providing students with latex science and technology knowledge; enhancing skills in preparation, testing and evaluation of latex concentrate as well as the basic principles in latex manufacturing and product testing.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyze tests results using fundamental knowledge of latex science and technology.
2. Differentiate latex compounding ingredients, its preparation methods, processes involved in producing latex products and various latex products.
3. Reproduce laboratory works of latex concentrate and embedded the entrepreneurial element in the recipe or processing given.
4. Perform effective discussion in the area of latex science and technology.

References:

1. Blackley D.C. (1997). *Polymer Latices Science and Technology*, 2nd Edition Vol. 1: Fundamental Principles, Chapman & Hall.
2. Blackley D.C. (1997). *Polymer Latices Science and Technology*, 2nd Edition Vol. 2: Types of Latices, Chapman & Hall
3. Blackley D.C. (1997). *Polymer Latices Science and Technology*, 2nd Edition Vol. 3: Application of Latices, Chapman & Hall.
4. Rani Joseph, (2013), *Practical Guide to Latex Technology*, Smithers Rapra Technology Ltd
5. Third International Conference on Synthetic Emulsions, Natural Latex and Latex Based Products, (2004). Rapra Technology Ltd.
6. Anderson C.D and Daniels E.S. (2003). *Emulsion, Polymerization and Latex Applications*, Smithers Rapra.

CRD20204 PLASTICS PROCESSING

This course provides students with basic concepts and skills of plastics processing which include details of selection and operation of the plastic processing equipment

Learning Outcomes:

Upon completion of this course students should be able to:

1. Differentiate various types of plastic materials and their additives
2. Analyze the plastic processing techniques and defects in the finished products.
3. Reproduce the correct plastic processing techniques including the entrepreneurial elements
4. Demonstrate role either as a leader or ordinary member in a team effectively.

References:

1. Brent Strong, 3rd ed (2006), *Plastics Materials and Processing*, Upper Saddle River, NJ: Pearson Prentice Hall
2. Charles A. Harper, Edward M. Petrie, (2003). *Plastics Materials and Processes: A Concise Encyclopedia*, Wiley-Interscience
3. Susan E.M. Selke, John D. Culter, Ruben J. Hernandez, (2004), *Plastics Packaging Properties, Processing, Applications, and Regulations*, 2nd Ed, Hanser Gardner Publications
4. R.J. Crawford (2003). *Plastics Engineering*, 3rd Ed, Butterworth-Heinemann
5. Manas Chanda, K. Salil Roy. (2007). *Plastics Technology Handbook*. CRC Press/Taylor & Francis.

CRD20303 RUBBER PROCESSING

This is an introductory course aimed at providing students with the fundamental principles of rubber materials and properties and understanding of the principles of the basic rubber processing operations.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyze the types, properties, rheological, vulcanizates and applications of rubber.
2. Differentiate between the different types of rubber manufacturing techniques and testing.
3. Reproduce the correct rubber processing and analysis techniques according to different requirements where technopreneurial element is considered.
4. Demonstrate role either as a leader or ordinary member in a team effectively.

References:

1. James Lindsay White (1995). *Rubber Processing: Technology, Materials, Principles*, Hanser Publishers.
2. Grossman R.F. (2012). *The Mixing of Rubber*, Springer Science & Business Media
3. NIIR Board Consultant of Engineers. (2010), *The Complete Book on Rubber Processing and Compounding*, NIIR Project Consultancy Services
4. James E. Mark, Burak Erman, Frederick R. Eirich (2013). *Science and Technology of Rubber*, (4th Edition), Academic Press
5. Indian Rubber Institute (1999). *Rubber Engineering*, McGraw Hill Education
6. Peter S. Johnson (2001). *Rubber Processing: An Introduction*, Hanser Publishers
7. Blow C.M. (2009). *Rubber Technology and Manufacture*, Butterworths-Heinemann London.

CRD30003 COMPOSITE TECHNOLOGY

This is an introductory course aimed at providing students with basic information on the concepts and applications of polymer composites; the common materials used in polymer composites and their features as well as the basic principles in composite manufacturing processes. These fundamentals are essential as polymer composites find widespread applications in transportation, construction, agricultural, electrical/electronic, military, sports/leisure and medical industries

Learning Outcomes:

Upon completion of this course students should be able to:

1. Analyze the components of polymer composites, functions and commercial applications.
2. Differentiate types of composites manufacturing.
3. Demonstrate ability to work in a team either as a leader or ordinary member in completing laboratory-based assignment.
4. Demonstrate ability to embedded entrepreneurial elements in the laboratory-based assignment

References:

1. Astrom B.T. (2002), *Manufacturing of Polymer Composites*, Chapman & Hall
2. McRum, N.G. (1997). *Principles of Polymer Engineering*, 2nd Edition. Oxford University Press
3. Hull, D. (1981). *Introduction to Composite Materials*. Cambridge University Press.
4. Harris, B. (1986). *Engineering Composite Materials*. Institute of Materials
5. Campbell, F.C. (2004). *Manufacturing Processes for Advanced Composites*. Elsevier, Oxford

CRD30703 POLYMER SYNTHESIS

This course is aimed at providing students with information on; various polymerization processes; copolymerization processes and the methods to control it. Students also carry out the polymerization processes in laboratory sessions.

Learning Outcomes:

Upon completion of this course students should be able to:

1. Compare and contrast types of polymers and polymerization
2. Differentiate between step-growth polymerization, chain-growth polymerization and co-polymerization in terms of its mechanisms, kinetics and modes of polymerization
3. Conduct laboratory works with suitable preparation of polymerization sequence according to different polymerization methods safely.
4. Demonstrate role either as leader or ordinary member in a team effectively.

References:

1. Odian, G. (2004). *Principles of Polymerization*, 4th Edition. Wiley
2. Charles E. Carraher, Jr. (2013). *Introduction to Polymer Chemistry*, 3rd Ed. CRC Press
3. Billmeyer, F. W. Jr. (1984). *Textbook of Polymer Science*, 3rd Edition. Wiley
4. Young R. J. and Lovell P. A. (2011). *Introduction to Polymers*. 3rd Ed., CRC Press
5. Brandrup J., Immergut E. H., and Grulke E. A. (1999). *Polymer Handbook* 4th Ed., Wiley-Interscience

PROGRAMME STRUCTURE: *(subject to amendments)*

YEAR 1: SEMESTER 1

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10703	ENGINEERING DRAWING & COMPUTING	3	15	30	36	9	30	120
2	WED10402	COMPETENCY ENGLISH	2	14	14	0	5	47	80
3	MPU 2313 MPU 2323	AMALAN ISLAM DI MALAYSIA (LOCAL MUSLIM) RELIGIOUS PRACTICES IN MALAYSIA (LOCAL NON MUSLIM & INT.)	3	17	0	0	34	69	120
4	WQD10103	TECHNICAL MATHEMATICS 1	3	34	17	0	6	63	120
5	CLD10003	GENERAL CHEMISTRY	3	17	11	47	7	38	120
6	WMD10101	MANDARIN 1	1	21	0	0	4	25	50
7	MPU24*2	CO-CURRICULUM	2						80
TOTAL			17	118	72	83	65	272	690

YEAR 1: SEMESTER 2

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD10803	ORGANIC & ANALYTICAL CHEMISTRY	3	34	0	36	7	43	120
2	CLD10502	PRINCIPLES OF CHEMICAL PROCESS	2	14	13	17	4	32	80
3	WED20202	COMMUNICATION ENGLISH 1	2	13	13	0	3	51	80
4	CLD20102	ELECTRICAL TECHNOLOGY	2	14	0	22	5	39	80
5	CLD10603	FLUID MECHANICS	3	15	20	36	4	45	120
6	MPU2232	INTERPERSONAL SKILLS	2	17	0	0	25	78	120
7	WQD10203	TECHNICAL MATHEMATICS 2	3	34	17	0	6	63	120
TOTAL			17	141	63	111	54	351	720

YEAR 2: SEMESTER 3

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CLD20002	OCCUPATIONAL SAFETY AND HEALTH	2	14	12	0	6	48	80
2	WMD10201	MANDARIN 2	1	21	0	0	4	25	50
3	CLD20202	PROCESS INSTRUMENTATION	2	14	0	25	4	37	80
4	MPU2163 MPU2133	PENGAJIAN MALAYSIA 2 (LOCAL) BAHASA MELAYU KOMUNIKASI (INT)	3	17	0	0	25	78	120
5	CLD20302	THERMODYNAMICS	2	14	22	7	6	31	80
6	CLD20402	TRANSPORT PROCESS	2	15	0	33	4	28	80
7	CLD20502	BASIC ENGINEERING WORKSHOP	2	17	0	33	3	27	80
8	WBD10102	INTRODUCTION TO ENTREPRENEURSHIP	2	17	28	0	6	29	80
9	WED20302	COMMUNICATION ENGLISH 2	2	13	13	0	3	51	80
TOTAL			18	142	75	98	61	354	730

YEAR 2: SEMESTER 4

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CKD 20003	REACTOR TECHNOLOGY	3	14	11	29	7	59	120
2	CLD 21002	STATISTICS	2	15	22	0	5	38	80
3	CRD 20003	INTRODUCTION TO POLYMER SCIENCE AND TECHNOLOGY	3	22	0	33	6	64	125
4	CRD 20303	RUBBER PROCESSING	3	22	0	36	8	51	117
5	CRD 20204	PLASTICS PROCESSING	4	33	0	48	7	75	163
6	CKD20102	SEPARATION TECHNOLOGY	2	12	0	16	5	47	80
TOTAL			17	118	33	162	38	334	685

YEAR 3: SEMESTER 5

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	CRD 30003	COMPOSITE TECHNOLOGY	3	27	0	12	6	67	112
2	CRD 20104	LATEX SCIENCE & TECHNOLOGY	4	26	0	42	5	79	152
3	CRD 30703	POLYMER SYNTHESIS	3	24	0	46	6	51	127
4	CPD39806	FINAL YEAR PROJECT	6	5	0	195	1	39	240
TOTAL			16	82	0	295	18	236	631

YEAR 3: SEMESTER 6

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	WID41009	INDUSTRIAL TRAINING	9	0	0	320	4	36	360
TOTAL			9	0	0	320	4	36	360

Total Credit to Graduate (TCG): 94

*** Applicable for Malaysian Students**

Students must register and pass subject MPU3213 Bahasa Kebangsaan A before graduation if attain grade D and E in Bahasa Melayu at SPM level and never passed Bahasa Kebangsaan A in their previous programme. Other conditions: refer to your Academic Advisor. Students under this category will graduate with additional of 3 credits on top of TCG.

* Passing mark for all MPU Compulsory subjects is 50 marks (C).

Co-Curriculum Courses

NO	COURSE CODE	COURSE	CREDIT	F2F				NON F2F	TOTAL SLT
				L	T	P	O		
1	MPU2412	CAREER GUIDANCE 1	2	17	0	0	18	45	80
2	MPU2422	COMMUNITY SERVICE 1	2	17	0	0	9	54	80
3	MPU2442	RAKAN MASJID 1	2	17	0	10	1	52	80
4	MPU2452	SISWA-SISWI BOMABA & PENYELAMAT 1	2	17	0	25	0	38	80
5	MPU2462	SISWA-SISWI PERTAHANAN AWAM	2	17	0	16	0	47	80
6	MPU2472	SPORTS MANAGEMENT 1	2	17	0	9	8	46	80
7	MPU2482	PERSONAL FINANCIAL MANAGEMENT 1	2	17	0	18	3	42	80
8	MPU2432	CULTURE 1	2	17	0	23	0	40	80

Academic Calendar 2020

Day	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21
Sun			1								1		
Mon			Wk4 2			Wk14 1		Merdeka 31			Wk15 2		
Tues			3			2			Wk 7 1		Wk7 S 3	1	
Wed	New Year 1		4	1		3	1		2		4	2	
Thurs	2		5	2		4	2		3	1	5	3	
Friday	3		6	3	Worker's Day 1	5	3		4	2	6	4	New Year 1
Sat	4	1	7	4	2	Agong's bday 6	4	1	5	3	7	5	2
Sun	5	Jan Intake Reg 2	8	5	3	7	5	2	6	4	8	6	3
Mon	6	WOW 3	Wk5 9	Wk6 6	Wk10 4	Wk15 8	6	Wk3 3	Wk8 7	Wk11 5	Wk16 9	Wk11 S 7	4
Tues	7	4	10	7	5	9	7	4	8	Wk3 S 6	MSB 10	FE 8	5
Wed	8	5	11	8	6	10	8	5	9	7	for 11	9	FES14Wks 6
Thurs	9	6	12	9	Wesak 7	11	9	6	10	8	Sep-12	10	FES14Wks 7
Friday	10	7	13	10	8	12	IEB 10	7	11	9	Intake 13	11	FES14Wks 8
Sat	11	8	14	11	9	Rev 13	11	8	12	10	Diwali 14	12	FES14Wks 9
Sun	12	9	15	12	10	14	July Int reg 12	9	pt Int Reg (B) 13	11	15	13	FES14Wks 10
Mon	IEB 13	Wk1 10	16	Wk 7 13	Wk11 11	15	WOW 13	Wk4 10	14	Wk12 12	Wk17 16	Wk12 S	FES14Wks 11
Tues	14	11	17	14	12	16	UEB 14	11	WOWMSB 15	WK4 S 13	Wk8 S 17	15	FES14Wks 12
Wed	UEB 15	12	18	15	13	17	15	12	Masa Day 16	14	18	16	13
Thurs	16	13	19	16	14	18	Senate 16	13	17	15	19	17	14
Friday	Senate 17	14	20	17	15	19	17	14	18	16	20	18	15
Sat	18	15	21	18	16	20	18	15	19	17	21	19	16
Sun	19	16	22	19	17	21	19	16	20	18	22	20	17
Mon	20	Wk2 17	MSB 23	Wk8 20	Wk12 18	22	Wk1 20	Wk5 17	WK 9 21	Wk13 19	23	Wk13 S	18
Tues	21	18	24	21	19	23	21	18	Wk1 S 22	Wk5 S 20	Wk9 S 24	22	19
Wed	22	19	25	22	20	24	22	19	23	21	Rev 25	23	IEB 20
Thurs	23	20	26	23	21	25	23	Maulid Hijrah 20	24	22	26	24	21
Friday	24	21	27	24	22	26	24	21	25	23	27	X'mas 25	UAC 22
Sat	CNY 25	22	28	25	23	27	25	22	26	24	28	26	23
Sun	CNY 26	23	29	26	Eid Fitri* 24	28	26	23	27	25	29	27	Reg 24
Mon	CNY 27	Wk3 24	30	Wk9 27	Eid Fitri* 25	29	Wk2 27	Wk6 24	Wk10 28	Wk14 26	Wk10 S	Wk14 S	WOW 25
Tues	28	25	31	28	Eid Fitri* 26	30	28	25	Wk2 S 29	Wk6S 27		29	26
Wed	29	26		29	Wk13 27		29	26	30	28		30	27
Thu	30	27		30	28		30	27		Maulid Nabi 29		31	Senate 28
Fri	31	28			29		Eid Adha 31	28		30			29
Sat		29			30			29		31			30
Sun					31			30					31

Wk Academic Week for 17 Weeks

Wk'h' S Academic Week for Sept Intake 14 Weeks

1. Important Notes

(1) from 16 March to 3 April 2020, Universiti Kuala Lumpur has considered this period Mid Semester Break.

(2) from 5 April until 15 April 2020 University Kuala Lumpur has identified the period as familiarization period for teaching and learning via online modes.

(3) * There is no final examination for the January semester 2020. The final examination weeks shown in the summaries are only for designated courses where the final examinations have been made compulsory by regulatory bodies. For other courses, the weeks may be utilized for the distribution and submission of alternative assessments.

Semester	January sem 2020 (current)	Duration	January sem 2020 (adjusted)	Duration	July sem 2020	Duration	July sem 2020 (Sept Intake)	Duration
Activity	Dates	Day/ Wk	Dates	Day/ Wk	Dates	Day/ Wk	Dates	Day/ Wk
New Intake Registration	2-2-2020	1 day	2-2-2020	1 day	12-07-20	1 day	13-09-20	1 day
Welcome & Orientation Week (WOW)	3-7 Feb	1 wk	3-7 Feb	1 wk	13-17 July	1 wk	14-18 Sept	1 wk
Lessons	10 Feb-10 April	9 wks	10 Feb-13 March	5wks	20 Jul-11 Sept	8 wks	21 Sept-6 Nov	7 wks
Mid Sem Break	13-17 Apr	1 wk	16 March-3 Apr	3 wks	14-18 Sept	1 wk	9-13 Nov	1 wk
Lessons	20April-12 June	8 wks	6 April-12 June	10 wks	21 Sept-20 Nov	9 wks	16 Nov 2020-1 Jan 2021	7 wks
Revision	13-17 June	5 days	13-17 June	5 days	23-27 Nov	5 days	2-5 Jan 2021	4 days
Final Exam	18 June-1 July	2 wks	*18 June-1 July	2 wks	30 Nov-13 Dec	2 wks	6-12 Jan 2021	1 wk
End of Sem Break	2 -17 Jul	2.5 weeks	2 -17 Jul	2.5 weeks	14 Dec 2019-29 Jan 2021	7 wks	14-29 Jan 2021	2.5 wks