

ACADEMIC PROFORMA

—2020/2021—

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DIPLOMA IN CHEMICAL ENGINEERING TECHNOLOGY



**Universiti Tun Hussein
Onn Malaysia**
Is Rated as a **Four-Star** Institution



UTHM Produces
Professionals

PUSAT PENGAJIAN DIPLOMA
UTHM KAMPUS PAGOH, HAB PENDIDIKAN TINGGI PAGOH
KM1, Jalan Panchor, 84600, Panchor, Johor.

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©Centre for Academic Development and Training
Universiti Tun Hussein Onn Malaysia
September 2020

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Foreword from the Vice Chancellor



Assalamualaikum Warahmatullahi Wabarakatuh dan Selamat Sejahtera.

Congratulations and welcome to the new students and thank you also for the trust you chose to be with UTHM to continue your efforts for success in career and well-being in the future.

The world has been shocked by the outbreak of Coronavirus Disease 19 (Covid-19) which until now has not shown any sign that it will end. In order to comply with standard operating procedures issued by the competent bodies such as the Ministry of Health Malaysia and the Ministry of Higher Education, UTHM has undertaken various initiatives to curb the spread of epidemics in UTHM. Among the initiatives in the implementation of Learning and Teaching are through online methods namely Full Online Classroom (FOC), Smart Classroom, Flip Learning, Massive Open Online Course (MOOC) and more. Hopefully, continuous efforts at the highest management level and all UTHM staff will be able to prevent the spread of epidemics and be able to provide a conducive learning environment for all UTHM students.

The year 2019 saw UTHM continue to move forward in its efforts to become a leader in the field of science and technology education. This is evidenced by the overall rating of 4 stars by QS Stars Rating with 5 out of 7 categories given a 5 star rating namely Teaching, Employability, Facilities, Social Responsibility and Inclusiveness categories. Apart from that, UTHM has also ranked 8th in Malaysia in Webometrics Ranging Web of Universities with 13th place ranking at the university level in the world. Apart from that, UTHM students are also not left behind in winning various awards at the international level as well as making UTHM famous in the world.

Finally, I have full confidence that you will be a successful University citizen and can continue the tradition of University educational excellence. I am also confident that when you graduate, you will become a member of the community who is able to apply the knowledge that will be obtained and be able to contribute services, devotion and expertise for the sake of Religion, Nation and Country.

Wishing You Success.

“DENGAN HIKMAH KITA MENEROKA”

Y. BHG. PROFESOR TS. DR. WAHID BIN RAZZALY

Naib Canselor

Universiti Tun Hussein Onn Malaysia

Foreword from the Deputy of Vice Chancellor (Academic and International)



Assalamualaikum Warahmatullahi Wabarakatuh dan Selamat Sejahtera.

I would like to take this opportunity to congratulate new students who have been successfully selected to further their studies at Universiti Tun Hussein Onn Malaysia for this 2020/2021 session. Congratulations also to the Center for Academic Development and Training who has successfully published proforma which will be a guide for students to make learning planning from the first semester to graduation at this University.

The Coronavirus Disease 2019 (Covid-19) pandemic has changed the landscape of higher education in Malaysia. The process of learning and teaching (PdP) which previously went face to face had to be changed to the form of online learning to comply with the Standard Operating Procedures aimed at curbing the spread of the Covid-19 epidemic. For Semester 1 Session 2020/2021, UTHM has also encouraged the implementation of PdP in hybrid that is, part PdP face to face and part online. It is hoped that this effort will reduce the risk of Covid-19 infection, especially to UTHM students and academic staff.

To ensure the PnP process runs smoothly, UTHM has taken various proactive measures such as providing ICT infrastructure including increasing broadband line capacity, ICT infrastructure and providing online platforms such as Author applications, Google Classroom and e-Portfolio. In addition, UTHM lecturers have also been given training related to the online learning and teaching process to ensure that the teaching process runs efficiently.

I hope with the various initiatives that have been and are being done by UTHM will be able to provide a useful experience to you while exploring knowledge at UTHM. I would like to call on you to take the opportunity to be at UTHM to explore your potential through various activities and co-curricular programs provided in making you a holistic and balanced student. To achieve the aspirations of UTHM, the initial planning through Proforma will be able to help you plan your journey throughout the study period at UTHM and it is hoped that you will be able to obtain the best results and achieve excellent success.

Finally, I would like to wish you success and pray that you achieve excellent success in your studies at this University and in turn can contribute towards the provision of human capital that will contribute to the development of religion, race and country.

“DENGAN HIKMAH KITA MENEROKA”

PROFESOR DR. ISMAIL ABDUL RAHMAN
Timbalan Naib Canselor (Akademik dan Antarabangsa)
Universiti Tun Hussein Onn Malaysia

Foreword from the Dean

Assalamualaikum Warahmatullahi Wabarakatuh and Warm Greetings



Congratulations and welcome to all of you that have made the right choice of taking the first step in joining Universiti Tun Hussein Onn Malaysia (UTHM) that is the 15th IPTA established in Malaysia. I wish to welcome all of you to the Centre for Diploma Studies (CeDS) which is always ready to support and train you to be a semi-professional in the field of engineering, science and technology.

As a center, we are responsible for running and operating the Diploma programmes at UTHM, CeDS has a clear vision and mission in developing and empowering all Diploma programmes offered. Currently, six (6) Diploma programmes being offered and the number of programmes will be increasing in the future in line with the country's employment needs. I believed you have chosen a suitable programme that suits your qualifications and dreams. Furthermore, the study period for all programmes is only 2 years and 9 months, the student will be completed their studies in a shorter time. In the meantime, Diploma graduates will be absorbed to continue to follow the Bachelor Degree programmes at UTHM with respect to the terms and conditions imposed.

In terms of infrastructure and teaching and learning facilities provided at UTHM have been recognized to fulfill the standard required accreditation bodies. In addition, the rapid development of the UTHM campus will now ensure the comfort of students with various facilities provided including libraries, residential colleges, cafeterias, sports activities, wireless internet connection, and various other amenities.

I hope that as a new student of the UTHM Diploma in UTHM, you will use this proforma as a guide and reference to facilitate you to plan and subsequently complete your diploma study program with excellence.

Wishing You Success.

ASSOCIATE PROFESOR DR. MOHAMAD ZAKY BIN NOH
Dean
Centre for Diploma Studies
Universiti Tun Hussein Onn Malaysia



Vision

Towards a world class university in engineering, science and technology for sustainable development

Mission

UTHM is committed to generate and disseminate knowledge, to meet the needs of industry and community and nurturing creative and innovative human capital, based on tauhidic paradigm

University Education Philosophy

The education and training in this university is a continuous effort to lead in the market oriented academic programmes. These programmes are student-focused and are conducted through experiential learning in order to produce well trained human resource and professionals who are catalysts for a sustainable development

University Logo

The logo of Universiti Tun Hussein Onn Malaysia (UTHM) is the pride, identity and idealism of the members of UTHM community. UTHM logo displays a Proton, Book, Tiered Mortar Board, Book Rest and Shield.

The whole concept of the logo symbolises UTHM as an Institution of Higher Learning which supports the growth and development of knowledge at all levels in fields of Science and Technology.

Blue represents a close-knit circle of members of UTHM community which ensures the success and enhancement of its educational and research programmes and activities for the benefits of mankind.

Red symbolises the courage of UTHM in the exploration of new fields as the pioneer in science and technology applications, which reflects the spirit and self-esteem of the members of UTHM community.

Symbolism:

Red	Courage
Blue	Co-operation/Loyalty
Silver	Quality/Prestige
Book Rest	Repository of knowledge
Proton	Science and technology
Book	Knowledge
Mortar board	Levels of study
Shield	Confidence

Chancellor



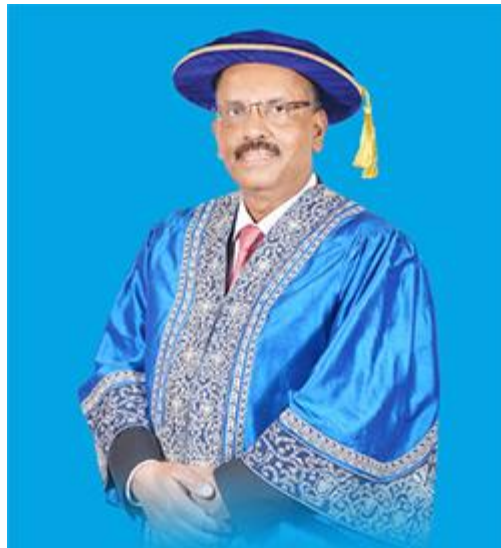
Duli Yang Maha Mulia Sultan Ibrahim ibni Almarhum Sultan Iskandar
Sultan Yang Dipertuan Bagi Negeri Dan Jajahan Takluk Johor Darul Ta'zim
D.K., D.K.(Pahang), SPMJ, SSIJ, S.M.N., S.P.M.T., S.M.P.K., P.I.S.

Pro Chancellor I



Duli Yang Amat Mulia Tunku Ismail Ibni Sultan Ibrahim
Tunku Mahkota of Johor (TMJ)
D.K., SPMJ, P.I.S

Pro Chancellor II



YBhg. Tan Sri Dr. Ali Hamsa

University Board of Directors

Chairman

YBhg. Dato' Dr. Mohd Sofi Osman
Pengarah Urusan & Naib Presiden
PEN Operations

Members

Y. Bhg. Prof. Ts. Dr. Wahid bin Razzaly
Naib Canselor
Universiti Tun Hussein Onn Malaysia

YB Dato' (Dr.) Haji Nooh bin Gadot
Penasihat
Majlis Agama Islam Johor

YBhg. Datuk Ts. Pang Chau Leong
Wakil Alumni
Universiti Tun Hussein Onn Malaysia

YBhg. Dato' Ir. Dr. Haji Abdul Rashid bin Maidin
Akademi Profesional Koperasi Serbaguna Anak-anak Selangor Berhad (KOSAS)

YBrs. Encik Ahmad Luqman bin Mohd. Azmi
Ketua Pegawai Operasi Malaysia Airlines Berhad

YBrs. Dr. Sharifah Adlina binti Syed Abdullah
Kemeterian Kewangan Malaysia

YBhg. Dato' Dr. Mohd. Padzil bin Hashim
Wakil Swasta

YBhg. Prof. Dr. Azme bin Khamis
Universiti Tun Hussein Onn Malaysia

YBrs. Ts. Dr. Mohommad Naim bin Yaakub
Kementerian Pendidikan Tinggi Malaysia

Secretary

En. Abdul Halim bin Abdul Rahman
Pendaftar
Universiti Tun Hussein Onn Malaysia

Senate Members

Chairman

YBhg. Prof. Ts. Dr. Wahid bin Razzaly

Naib Canselor / Pengerusi

Members

Prof. Dr. Ismail bin Abdul Rahman

Timbalan Naib Canselor (Akademik dan Antarabangsa)

Professor Dr. Mohd Shahir Shamsir Bin Omar

Timbalan Naib Canselor (Penyelidikan dan Inovasi)

Prof. Madya Dr. Afandi bin Ahmad

Timbalan Naib Canselor (Hal Ehwat Pelajar dan Alumni)

Prof. Madya Ts. Dr. Mohd Kamarulzaki bin Mustafa

Provost UTHM Kampus Cawangan Pagoh

Prof. Dr. Ahmad Tarmizi bin Abdul Karim

Penolong Naib Canselor (Pembangunan, Pengurusan Fasiliti dan ICT)

Prof. Madya Dr. Mas Fawzi bin Mohd Ali *

Penolong Naib Canselor (Perancangan Strategik dan Perhubungan Korporat)

Prof. Dr. Azme bin Khamis

Dekan, Pusat Pengajian Siswazah

Prof. Ir. Ts. Dr. Mohd Irwan bin Juki

Dekan, Fakulti Kejuruteraan Awam dan Alam Sekitar

Prof. Madya Dr. Rosli bin Omar

Dekan, Fakulti Kejuruteraan Elektrik dan Elektronik

Prof. Dr. Shahrudin bin Mahzan @ Mohd Zin

Dekan, Fakulti Kejuruteraan Mekanikal dan Pembuatan

Prof. Dr. Wan Fauzi@Fauziah binti Wan Yusoff

Dekan, Fakulti Pengurusan Teknologi dan Perniagaan

Prof. Ts. Dr. Abdul Rasid bin Abdul Razzaq

Dekan, Fakulti Pendidikan Teknikal dan Vokasional

Ts. Dr. Azizul Azhar bin Ramli

Dekan, Fakulti Sains Komputer dan Teknologi Maklumat

Prof. Dr Hashim bin Saim

Dekan, Fakulti Sains Gunaan dan Teknologi

Prof. Madya Dr Jumadi bin Abdul Shukor

Dekan, Fakulti Teknologi Kejuruteraan

Prof. Madya Dr. Mohamad Zaky bin Noh

Dekan, Pusat Pengajian Diploma

Prof. Madya Dr. Khairul Azman bin Mohamad Suhaimy

Dekan, Pusat Pengajian Umum dan Kokurikulum

Dr. Zailin Shah binti Yusoff
Dekan Pusat Pengajian Bahasa

Prof. Madya Dr. Ishak bin Baba
Pengarah Pusat Pembangunan dan Latihan Akademik

Prof. Madya Ts. Dr. Razali bin Hassan
Pengarah Institut Penyelidikan Pendidikan dan Latihan Vokasional Malaysia
(MyRIVET)

Prof. Dr. Hj. Rosman bin Md. Yusoff
Pengarah Institut Transformasi Sosial dan Pembangunan Wilayah

Prof. Ts. Dr. Abd Halid bin Abdullah
Fakulti Kejuruteraan Awam dan Alam Sekitar

Prof. Dr. Noridah binti Mohamad
Fakulti Kejuruteraan Awam dan Alam Bina

Prof. Dr. Mohammad Faiz Liew bin Abdullah
Fakulti Kejuruteraan Elektrik dan Elektronik

Prof. Ir. Dr. Md Saidin bin Wahab
Fakulti Kejuruteraan Mekanikal dan Pembuatan

Prof. Dr. Yusri bin Yusof
Fakulti Kejuruteraan Mekanikal dan Pembuatan

Prof. Dr. Abdul Talib bin Bon
Fakulti Pengurusan Teknologi dan Perniagaan

Prof. Dr. Rosziati binti Ibrahim
Fakulti Sains Komputer dan Teknologi Maklumat

Prof. Dr. Nazri bin Mohd Nawi
Fakulti Sains Komputer dan Teknologi Maklumat

Prof. Dr. Rozaini bin Roslan
Fakulti Sains Gunaan dan Teknologi

Prof. Madya Ts. Dr. Mohd Farhan bin Md. Fudzee
Pengarah Pusat Teknologi Maklumat

Ir. Dr. Raha bt. Abd. Rahman
Felo Industri

En. Abdul Halim bin Abdul Rahman
Pendaftar / Setiausaha Senat

En. Norzaimi bin Hamisan
Bendahari

Pn. Zaharah binti Abd Samad
Ketua Pustakawan

Pn. Norliah binti Yaakub
Penasihat Undang-Undang

Centre for Diploma Studies

Centre Vision

Excellent in providing multidisciplinary education in science and technology

Centre Mission

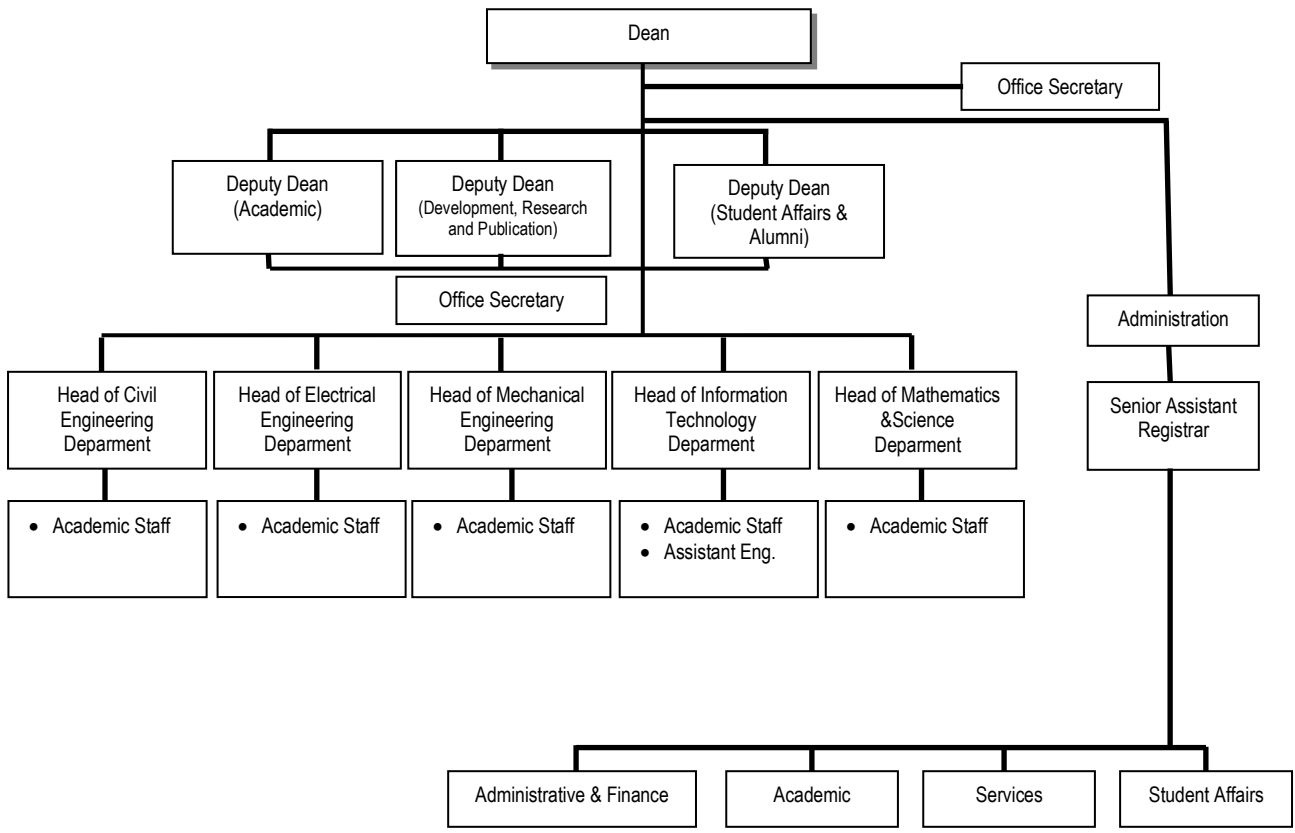
Producing graduates who contribute to national development through a holistic academic program

The diploma programmes had been offered in UTHM since the establishment of Pusat Latihan Staf Politeknik (PLSP) in 1994. At that time only three programmes were offered and were being managed by a few departments of concerned. All of the programmes were then assigned under the management of the respective faculties when Kolej Universiti Teknologi Tun Hussein Onn (KUiTTHO) was established in the year 2001.

The establishment of the Centre for Diploma Studies was announced by the Vice Chancellor on the 1st August 2009. With the establishment of the Centre for Diploma Studies all of the diploma programme were able to be managed centrally thus increasing the competitiveness of all diploma programmes being offered by other higher education institutions in this country.

It is the aim of the Centre for Diploma Studies to boost the diploma programmes in UTHM to a level such that it becomes the main choice of applicants. With that all potential applicants are most welcome to join the diploma programme in UTHM. All of the diploma programmes in UTHM is being conducted according to the Outcome Based Education method since the July 2010 session. The diploma programmes offer the opportunities for graduates to further their studies in UTHM. The establishment of the Centre for Diploma Studies is intended to achieved equilibrium in the academic excellence, co-curriculum and the individual development of its graduate such that to achieved the quality needed to fulfill the global occupational market. Until now the Centre for Diploma Studies, have offered six (6) programmes which are being managed by the various departments.

The Centre for Diploma Studies consists of five (5) departments and is led by a Dean and is being assisted by three (3) Deputy Deans. The organizational chart of the Centre for Diploma Studies is as shown:



Organisational chart of the Centre for Diploma Studies

Centre External Examiner and Industrial Advisor

Department of Sciences and Mathematics

External Examiner

Prof. Madya Dr. Siti Salhah binti Othman

Profesor Madya
Fakulti Sains dan Teknologi
Universiti Sains Islam Malaysia (USIM)

Prof. Madya Dr. Mior Ahmad Kushairi bin Mohd Zahari

Fakulti Kejuteraan Kimia dan Sumber Asli,
Universiti Malaysia Pahang (UMP)

Industrial Advisor

Encik Dzulhilmi bin Kamarudin Sohami

Planning Manager Supply
Nestle (M) Berhad
Dmansara

Puan Maskhairiah binti Ismail

Environmental Officer
ESH Department, Samsung SDI Energy, Malaysia

Faculty Staff Directory

Administration

Dean

Associate Professor Dr. Mohamad Zaky bin Noh

Ph.D (Physic)(USM), MSc. (Physic)(UTM), BSc. (Physic)(UTM)

Deputy Dean (Academic)

Hj. Amir Khan bin Suwandi

MSc. (Civil Engineering) (UTM), BSc. (Hons) (Civil Engineering) (Portland State Univ. USA), Dip. Ed.(Civil Engineering Studies) (UTM)

Deputy Dean (Student Affairs and Alumni)

Hjh. Ziana bt Che Ros

M. Eng (Electrical)(UTHM), B. Eng. (Hons)(Electrical Engineering.) (UTM), Diploma (Electrical Engineering)(UiTM)

Deputy Dean (Development, Research and Publication)

Associate Professor Hj. Masiri bin Kaamin

MSc.(Land Survey-GIS) (UTM), BSc.(Land Survey) (UTM)

Assistant Office Secretary

Nor Suraya binti Abdul Samad

BSc. (Computer Mathematics) (UiTM), Dip. (Computer Science)(UiTM)

Administrative Assistant (Deputy Dean Secretary)

Nurul Farhana binti Ashaari

Dip. (Public Administration) (Diploma Vokasional Malaysia)

Senior Assistant Registrar

Cik Norfaizah binti Sai

BSc. Human Resources (UPM), STPM (SM.Ungku Aziz, Sabak Bernam), SPM(SM.Convent Klang)

Assistant Administrative Officer (Academic)

Latifah binti Mohd Nasir

Dip.(International Business) (Politeknik Shah Alam)

Assistant Administrative Officer (Administrative and Finance)

Nur Izzati Hazwani binti Muhammad Ridwan

BSc. (Administration)(UiTM), Dip. (Tech. Management) (UTM)

Senior Administrative Assistant (Clerical & Operation) Student Affairs and Alumni

Ismade bin Niam

STPM (SM Tun Sardon Rengit)

SeniorAdministrative Assistant (Clerical & Operation) Administrative and Finance

Dorazi bin Md Noh

SPM (SM.Dato Sulaiman)

Administrative Assistant (Clerical & Operation) Academic

Razali bin Ahmad

SPM (SMK Tinggi Batu Pahat)

Administrative Assistant (Clerical & Operation) Development, Research and Publication

Muhammad Firdaus bin Yaacob
SPM (SMK Khir Johari)

Operation Assistant

Azwan bin Roslee
SPM (SMK Sultan Alauddin Riayat Shah 1, Pagoh)

Department of Sciences and Mathematics

Academic Staff

Head of Department

Dr. Norhazimah binti Abdul Halim
PhD (Bioprocess Engineering) (UMP), MEng (Bioprocess) (UMP), BEng (Chemical)(Biotechnology)(UMP)

Assoc. Prof. Dr Hjh. Nafisah @Kamariah binti Hj Md Kamaruddin

MSc. (Algebra & Statistics) (Ohio University, USA), BSc. (Mathematics) (University of Brigeport, USA)

Ts. Aida binti Muhamad

MEng (Civil Engineering) (UTHM), BSc.(Hons). (Chemistry) (UKM)

Pn. Siti Fatimah binti Mohd Noor

MSc. (Molecular Biology) (UKM), BSc.(Hons). (Genetics) (RIHS)

Pn. Rozainita binti Rosley

MSc. (Chemical Synthesis) (UPM), BSc, (Hons) (Petroleum Chemistry) (UPM)

Pn. Norliza binti Ghazali

MBA. (Strategic Management) (UTM), BSc. (Economy) (USM)

Cik Norbaizura binti Nordin

MSc. (Physic Instrumentation) (UPM), BSc, (Hons) (Physic) (UPM)

En. Misbahul Muneer bin Abd Rahman

BEng. (Chemical) (UiTM)

Pn. Nurhana binti Mohamad

MSc. (Mathematics) (UTM), BSc. (Industrial Mathematics) (UTM)

Pn. Jamilah binti Mohd Ghazali

MSc (Applied Mathematics)(UiTM), BSc(Mathematics Management)(UiTM)

Dr. Dilaeleyana binti Abu Bakar Sidik

PhD Eng (Tech)(UTHM)MEng (Chemical)(UTM), BEng (Chemical)(UMP),

Pn. Raudah binti Mohd Adnan

MBA (Marketing) (UPM), BBA (Marketing) (UiTM), Dip of Ed (Arts) (UPSI), Dip. Bus. Studies (UiTM)

Dr. Siti Noraiza binti Ab Razak

PhD (Physics)(UTM), MSc (Physics)(UTM), BSc (Health Physics)(UTM)

Pn. Norazreen binti Sharip

MSc (Physics)(UTM), BSc (Health Physics)(UTM)

Pn. Norain binti Ahmad Nordin

MSc. (Mathematics) (UTM), BSc. (Industrial Mathematics) (UTM)

Pn. Shazana bte Hashim

MSc. (Applied Statistic) (UPM), BSc. (Statistics) (UiTM)

Pn. Nuramirah binti Juma'at.

MSc. (Mathematics Engineering) (UTM), BSc. (Mathematics) (UTM)

Dr Norhaliza binti Abu Bakar

PhD (Applied Maths), MSc. (App. Mathematics) (UPM), BSc. with Education (Honours) Mathematics (UPM)

Dr. Muhammad Sufi bin Roslan

PhD (Physics) (UTM), MSc (Physics) (UTM), BSc (Physics)(UTM)

Cik Nur Shahirah binti Mohd Aripin

MEng (Chemical) (UKM), BEng (Chemical)(UiTM)

Cik Nurul Izzati binti Mohd Ismail

MEng (Bioprocess) (UTM), BEngTech (Biosystem)(UniKL).

Cik Basirah binti Fauzi

MPhil (Chemical Engineering) (UTM), BEng (Chemical-Bioprocess)(UTM)

Ts. Dr. Hazlini Binti Dzinun

PhD (Gas Engineering) (UTM), MEng (Civil-Environmental Planning) (UTM), BEng (Chemical)(UTM)

Dr. Adnin Afifi binti Nawi

PhD (Mathematics), BSc (Mathematics)

Dr. Mohd Zulariffin bin Maarof

PhD (Mathematics), Msc. (Mathematics), Bsc. (Mathematics)

En. Zul Afiq bin Sazeli

MSc. (Applied Mathematics), BSc. (Mathematics)

Programme Name

Diploma in Chemical Engineering Technology (DAK)

Programme Aims

Diploma in Chemical Engineering Technology is to produce semi – professional's human resource based on the following PEO.

Programme Educational Objectives (PEO)

These are the PEOs for Diploma in Chemical Engineering Technology:

The objective of the program is to produce semi-professionals human resource that:

PEO1: Apply theoretical and practical knowledge in solving problems of chemical engineering technology.

PEO2: Demonstrate professional and ethical attitude effectively and sustainably in chemical engineering technology field.

PEO3: Interact with professionals and the community effectively to carry out leadership responsibilities in an organization.

PEO4: Develop career path and leadership skill by lifelong learning.

Programme Learning Outcomes (PLO)

These are the PLOs for Diploma in Chemical Engineering Technology:

- PLO 1 Apply knowledge of mathematics, sciences and chemical engineering technology fundamentals to wide practical procedures and practices.
- PLO 2 Distinguish and analyse well defined problem
- PLO 3 Demonstrate the skills, techniques and knowledge for well defined problem solving using the latest technology for public health and safety, cultural, societal, and environmental considerations.
- PLO 4 Conduct investigations of well defined problems by identify and provide creative, innovative and effective solution in chemical engineering technology.
- PLO 5 Apply appropriate techniques, recourses, and modern engineering to well-defined chemical engineering technology problems.
- PLO 6 Imply an awareness and consideration for societal, health, safety, legal and cultural issues and their consequent responsibilities.
- PLO 7 Comprehend and evaluate the impact of engineering technician practices for sustainable development.
- PLO 8 Establish an understanding of professional ethics, responsibilities and norms of technician practices.
- PLO 9 Act effectively as an individual and as a member or leader in technical teams.
- PLO 10 Communicate effectively with the engineering community and diverse society.
- PLO 11 Practice an understanding of engineering management principles and apply to manage multidisciplinary projects.
- PLO 12 Recognize the requirements for professional development and engaging the needs of lifelong learning.

Curriculum

Table 1: Summary of curriculum for Diploma in Chemical Engineering Technology.

Tahun	Semester	Kod Kursus	Kursus	Kredit	Jumlah
0	Khas	UQI 10402 / UQI 11502	Pengantar Pengajian Islam / Pengantar Pengajian Moral	2	5
		UQU 10403	Pengantar Kenegaraan dan Pembangunan Malaysia	3	
1	I	UWB 1**02	Foreign Language	2	21
		UHB 10302	English for Academic Survival	2	
		UQ* 1***1	Co-Curriculum I	1	
		DAK 11003	Technical Mathematics I	3	
		DAK 13003	Physics for Engineering Technology	3	
		DAK 13303	Foundation of Chemical Engineering Technology	3	
		DAK 12201	Chemical Engineering Technology Labrotory	1	
		DAK 12903	Mass and Energy Balance	3	
	DAK 12403	Fluid Mechanics	3		
	II	UHB 20302	Academic Communication	2	19
		UQ* 1***1	Co-Curriculum II	1	
		UQI 11402	Philosophy and Current Issues	2	
		DAK 12603	Analytical Chemistry	3	
		DAS 11103	Technical Mathematics II	3	
		DAK 13102	Occupational, Safety and Health	2	
DAK 10502		Engineering Drawing	2		
DAK 11403		Organic Chemistry	3		
DAK 13201	Scientific Writing	1			
2	I	DAS 21002	Technical Mathematics III	2	18
		UHB 30502	English for Workplace	2	
		DAK 23803	Introduction to Biotechnology	3	
		DAK 20703	Thermodynamic	3	
		DAK 21503	Environmental Engineering Technology	3	
		DAK 23903	Separation Engineering Technology	3	
	DAK 21402	Chemical Engineering Technology Project I	2		
	II	DAK 22803	Process Control and Instrumentation	2	18
		DAN 20103	Perniagaan dan Keusahawanan	3	
		DAK 23703	Fermentation Engineering Technology	3	
		DAK 22303	Chemical Reaction Engineering	3	
		DAK 20803	Wastewater Treatment Technology	2	
DAK 21803		Chemical Engineering Technology Project II	3		
3	I	DAK 31511	Industrial training	11	11
Total Credit					92

Synopsis of University Courses

Tahun	Semester	Kod Kursus	Kursus	Kredit	Jumlah
	Khas	UQI 10402 / UQI 11502	Pengantar Pengajian Islam / Pengantar Pengajian Moral	2	7
		UQU 10403	Pengantar Kenegaraan dan Pembangunan Malaysia	3	
		UWB 1**02	Bahasa Asing	2	
1	I	UHB 10302	English for Academic Survival	2	3
		UQ* 1***1	Co-Curriculum I	1	
	II	UHB 20302	Academic Communication	2	3
		UQ* 1***1	Co-Curriculum I	1	
2	I	UHB 30502	English For Workplace	2	2
	II	DAN 20103	Perniagaan dan Keusahawanan	3	5
		UQI 11402	Falsafah dan Isu Semasa	2	
3	I	-	-	-	-
Jumlah Kredit					20

Synopsis of Courses

UQU 10403 Introduction to Nationhood and Development of Malaysia

Synopsis

This course discusses History and Politics, Malaysian Constitution, National Administrative System and Structure, Society and Unity, National Development as well as Religion and Beliefs. This course aims to produce graduates who have a national identity and a spirit of superior patriotism. Teaching and learning will be implemented in the form of lectures, assignments, examinations and learning experiences.

References

1. Modul Pengantar Kenegaraan dan Pembangunan Malaysia, (2018). Parit Raja : Penerbit UTHM
2. Mardiana Nordin dan Hasnah Hussin. (2014). Pengajian Malaysia. Shah Alam :Oxford Fajar
3. Mohamed Suffian Hashim. (1994). Mengenal Perlembagaan Malaysia. Edisi Kedua. Kuala Lumpur: Dewan Bahasa dan Pustaka.
4. Nazaruddin Haji Mohd Jail, Ma'rof Redzuan, Asnarulkhadi Abu Samah dan Ismail Hj Mohd Rashid. (2004). Pengajian Malaysia: Kenegaraan dan Kewarganegaraan.
5. Nazri Muslim. (2015). Islam dan Melayu: Tiang Seri Hubungan Etnik di Malaysia. Bangi: Penerbit UKM.

UQI 10402 Islamic Studies

Synopsis

This course explains about Islamic concept as ad-deen. It discusses the study of al-Quran and al-Hadith, Sunnism, schools of Islamic theology, development of schools of Fiqh, principles of muamalat, Islamic Criminal Law, Islamic work ethics, issues in Islamic family law and current issues.

References

1. Nik Kamal Wan Mohammed dan Lain-lain (2018), Modul Pembelajaran Pengantar Pengajian Islam (UQI10402), cetakan keempat 2018, Batu Pahat: Penerbit UTHM.
2. Roziah Sidik (2011), Pengajian Islam, Selangor: Oxford Fajar. (BP42 .R69 2011)
3. Al-Anjari, Fouzi (2013), Al-Asya'irah: Akidah Sebenar Ahli Sunnah Wal Jamaah, Seremban: Creative Publika. (BP166.14 .A54 2013)
4. Mohd Fauzi Mohd Amin (2011), Pemeraksanaan Fardhu Kifayah berteraskan al-Quran dan al-Sunnah, Negeri Sembilan: USIM. (BP130.8 .P45 2011)
5. Azzam, Abdul Aziz Muhammad (2010), Fiqh Muamalat: Sistem Transaksi dalam Fiqh Islam, Jakarta: Amzah. (BP158.C59 .A99 2010)

UQI 11502 Moral Studies

Synopsis

This course explains about the introduction to moral concepts, moral aspects and their importance in daily life. Western moral theory as well as the pure values of the great

religions of the world. Morality in various fields of employment, ethics in science and technology and finally current moral issues.

References

1. Eow Boon Hin. 2008. Moral Education. Longman. (LC268.E48 2008)
2. Ahmad Khamis. 1999. Etika Untuk Institusi Pengajian Tinggi. Kuala Lumpur. Kumpulan Budiman. (LC315.M3.A35 1999)
3. Mohd Nasir Omar. 1986. Falsafah Etika; Perbandingan Islam dan . Kuala Lumpur. JPM.

UQI 11402 Philosophy and Current Issues

Synopsis

This course covers the relationship of philosophy with the Philosophy of National Education and Rukunegara. The use of philosophy as a tool to purify the culture of thought in life through art and thinking methods as well as human concepts. The main topics in philosophy namely epistemology, metaphysics and ethics are discussed in the context of current issues. Emphasis is given to philosophy as the basis for inter-cultural dialogue and fostering common values. At the end of this course, students will be able to see the disciplines of knowledge as a comprehensive body of knowledge and related to each other.

References

1. Al-Attas, S.M. Naquib. (1991). The Concept of Education in Islam. Kuala Lumpur: ISTAC.
2. Al-Farugi, I.R. (1994). Al-Tawhid: Its Implications for Thought and Life, (2nd Ed.). Herndon: IIIT.
3. Phillips, D.C. (Ed.) (2014). Encyclopaedia of Educational Theory and Philosophy, (1st Ed.). SAGE Publication.
4. Dzulkifli, A.R. & Rosnani, H. (2019) Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020. Kuala Lumpur: IIUM Press.
5. Hospers, J. (1997). An Introduction to Philosophical Analysis, (4th Ed.). London: Routledge.

UHB 10302 English for Academic Survival

Synopsis

This course focuses on developing students' acquisition of English language skills required for higher education. This course assists students to read, write, listen and speak effectively and to become informed, literate and lifelong learners. By the end of the course, students should be able to use English for a wide range of personal and academic activities in the context of tertiary education.

References

1. Clark, R. C. (2004). Graphics learning: Proven guidelines for planning and evaluating visuals in training materials. San Fransisco, CA: Pfeiffer. LB1043.5 .C52 2004
2. Dunne, E. (1994). Talking and learning in groups. London: Routledge. LC6519 .D86 1990 N1

3. Galanes, G. J. (2013). *Effective group discussion: Theory and practice* (14th ed.). New York: McGraw-Hill. HM736 .G34 2013
4. Greasley, P. (2011). *Doing essays and assignments: Essential tips for students*. Thousand Oaks, CA: Sage Publication. LB1047.3 .G73 2011
5. Lim, P. L. (2014). *Listening & notetaking skills 2* (4th ed.). Boston: National Geographic Learning. PE1128 .L55 2014

UHB 20302 Academic Communication

Prerequisite Course: UHB 10302 English for Academic Survival

Synopsis

This course introduces students to critical reading and writing skills. Students are expected to read and respond critically to academic materials. This course will also provide opportunities for students to develop their academic writing skills in producing technical papers.

References

1. Anderson, P.V. (2014). *Technical communication : a reader-centered approach*. Boston : Cengage Learning. PE1475 .A52 2014
2. Fairbairn, Gavin J. (2011). *Reading, Writing and Reasoning; A Guide for Studerzrs*. Maidenhead: Open University Press, 2011. LB2395 .F34 2011
3. Jordan, R. R. (2003). *Academic Writing Course; study skills in English* (3rd ed.). Essex: Longman. PE1408 .J67 2003.
4. Langan, John. (2011). *College Writing Skilts* (8th ed.). New York: McGraw-Hill. PE1471 .L36 2011.
5. Lewis, Jill. (2002). *Reading for Academic Success : Reading and Strategies*. Boston: Houghton Mifflin. LB2395.3 .L48 2002.

UHB 30502 English for Workplace

Prerequisite: UHB 20302 Academic Communication

Synopsis

This course employs a task-based learning approach and focuses on developing students' delivery of speech in oral interactions and job interviews. Particular emphasis will be given to promote the mastery of self-directed learning, team-work, research, reasoning and creativity. This course also enables students to acquire the knowledge skills necessary for conducting and participating in meetings, which include writing of meeting documents and event proposals based on specific themes. Students will also be exposed to interview techniques.

References

1. Allen, J. G. (2004). *The complete Q and A job interview book* (4th ed.). Hoboken, NJ: John Wiley. HF5549.5.16 . A44 2004.
2. Corfield, R. (2008). *Preparing the perfect job application: Application forms and letters made easy*. New Delhi: Kohan Page. HF5383 .C67 2008.
3. Haynes, M. E. (2009). *Meeting skills for leaders: Make meetings more productive* (4th ed.). Rochester, NY: Axzo Press. HD30.3 .H39 2009.

4. Wendleton, K. (2014). Mastering the job interview and winning the game (5th ed.). Boston: Cengage Learning. HF5549.5.I6 .W46 2014.
5. Wrathall, J. (2011). Event management: Theory and practice. North Ryde, N.S.W: McGraw-Hill. GT3405 .W72 201.

UWB 102 Foreign Language**

Synopsis

This course is designed for students to learn the basic Foreign language. Students are exposed to the skills of listening, reading, speaking, and writing with basic vocabulary, grammar and structure. Students are also exposed to the real daily situations which will help them to communicate using Foreign language.

References

1. Booth, Trudie Maria, 2008. French Verbs Tenses. Mc Graw-Hill. Call no. : P 2271, U66 2008.
2. Lim Hong Swan, Yeoh Li Cheng, 2010. Mandarin Made Easy Through English. Batu Pahat: Penerbit UTHM. PL1129.E5 .L554 2009
3. Mohd Hisyam Abdul Rahim; Ahmad Sharifuddin Mustapha; Mohd Zain Mubarak. 2008. Bahasa Arab UMR 1312. Batu Pahat: Penerbit UTHM. PJ6115 .M445 2008
4. Surie Network, (2000) : Minna no Nihongo : Kaite Oboeru, Tokyo : 3A Corporation. PL539.3 M56 2000
5. Gabriele Kopp, Siegfried Büttner, 2004. Planet 1: Deutsch für Jugendliche: Kursbuch. Ismaning: Germany: Hueber Verlag. PF3129. K664 2004

UQ* 101 Co-Curriculum I**

Synopsis

The course offer various form of activities for student of Bachelor Degree and Diploma. Eight fields of activities offer are Public Speaking, Entrepreneurship, Sports, Community Services, Volunteership, Leadership, Culture and Innovation

UQ* 101 Co-Curriculum II**

Synopsis

The course offer various form of activities for student of Bachelor Degree and Diploma. Eight fields of activities offer are Public Speaking, Entrepreneurship, Sports, Community Services, Volunteership, Leadership, Culture and Innovation.

DAN 20103 Business and Entrepreneurship

Synopsis

This course aims nurturing an entrepreneurial culture among students and exposed them to the basics of entrepreneurial concept, entrepreneurial attributes as well as the development of creative and innovative skills that allow them to identify business opportunities and non-business. This course is designed to ensure students gain knowledge and skill related to fundamental of business and entrepreneurship such as introduction to entrepreneurship, business ownership, regulations and support services,

business environment assessment, marketing plans, operational plans, financial planning and business management plans.

References

1. Norliza Ghazali & Raudah Mohd Adnan: *Perniagaan dan Keusahawanan*, Penerbit UTHM, 2016
2. UiTM Entrepreneurship Study Group (2011). *Engineering Entrepreneurship*. Prentice Hall. (HB615.F86 2004)
3. Ariffin, S, Hamidon, S (2017). *Introduction to Entrepreneurship*. Oxford Fajar, Kuala Lumpur
4. Bessant J. Tidd, Joseph. (2011). *Innovation and Entrepreneurship*. 2nd ed. West Sussex: Wiley. (HD53.B48 2011)
5. Oxford Fajar (2013). *Third Edition. Entrepreneurship*. Sarimah Hanim Aman Shah & Cecilia Soon Teik Lan

DAS 11003 Technical Mathematics I

Synopsis

The course discusses the application of real numbers, exponent, logarithm, radicals, polynomial equation, inequalities and absolute value, the numerical methods of bisection and secant methods, arithmetic and geometric series in sequence and series. The course also discusses the basic of trigonometry and trigonometric equations and matrices and the arithmetic operations of complex number.

References

1. Nafisah@Kamariah Md. Kamaruddin et al. *Algebra (DAS10103)*. Centre for Science Studies, UTHM Publisher, 2010
2. Abd. Wahid Md Raji et al. *Matematik Asas, Jilid I&II*. Jabatan Matematik, Fakulti Sains, UTM, 2000
3. James, S. *Precalculus mathematics for calculus*. Belmont, CA: Brooks/Cole, 2002, [QA39.3 .S73 2002]
4. Howard Anton. *Elementary Linear Algebra*. New York. Wiley, 1994, [QA184 .A57 1994]
5. Glyn James. *Modern Engineering Mathematics*, England, Prentice Hall, 2001, [TA330 .J352 2001].

DAK 13003 Physics in Engineering and Technology

Synopsis

This course introduces students to physics knowledge needed related to work, energy, power, elasticity, heat and thermal expansion. The application involves the concept of density, specific gravity, pressure, Archimedes' Principle, Pascal's Principle, buoyancy in fluid, type of elastic modulus and thermal properties. The course also discusses the concept of vector and the principle of First and Second Law of Newton.

References

1. Knight, Randall D. (2013) *Physics for scientist and engineers : a strategic approach with Modern Physics 3rd Ed.*, Pearson QC23.2.K54 2013

2. Giambatista A., Richardson B.M., Richardson R.C., (2013) College Physics : with an integrated approach to forces and kinematics 4th Ed., New York : Mc Graw-Hill QC21.3.G52 2013.
3. Giordano, Nicholas J. (2013) College physics : reasoning and relationships 2nd Ed: Brooks/Cole QC21.3 .G564 2013
4. Serway, Raymond A (2014) Physics for scientist and engineers : a strategic approach with Modern Physics 3rd Ed., Pearson QC23.2.S474 2014
5. Masrianis Ahmad et. al. (2014) DAS 14103 Physics I. Centre for Science Studies, UTHM Publisher, UTHM Publisher

DAK 13303 Foundation of Chemical Engineering Technology

Synopsis

Foundation of chemical engineering technology provides students with a basic understanding of the chemical engineering field as well as its relation to biotechnology and bioprocess elements. Students will be introduced to the chemical engineering aspects in everyday life, the role of chemical engineering technology, basic engineering principles, chemical engineering applications, applications of biotechnology & bioprocessing, and safety, health, environment and ethics. Students will be engaged in the practice of these basic skills and knowledge through active learning exercises. Students will learn more about the tasks and responsibilities of a chemical engineering technologist through exploration learning in problem solving relation to biotechnology and bioprocesses.

References

1. Regina M. Murphy. (2007). Introduction to Chemical Processes: Principles, Analysis, and Synthesis. Dubuque, IA: McGraw-Hill. Call Number: TP155.7 .M87 2007
2. Don W. Green & Robert H. Perry. (2008). Perry's Chemical Engineers' Handbook (Chemical Engineers Handbook). 8th Edition, McGraw-Hill (Hardcover). Call Number: TP151 .P47 2008
3. Dhinakar S. Kompala. (2009). Bioprocess Engineering: Fundamentals and Applications. 1st edition, CRC.
4. David M. Himmelblau & James B. Riggs. (2004). Basic Principles and Calculations in Chemical Engineering, 7th Edition, Prentice Hall. Call Number: XX(102709.1)
5. Committee on Bioprocess Engineering & National Research Council. (1992). Putting Biotechnology to Work: Bioprocess Engineering. National Academies Press.
6. Brian S. Mitchell. (2004). An introduction to Materials Engineering And Science for Chemical and Materials Engineers. Hoboken, NJ: John Wiley. Call Number: TA403 .M57 2004

DAK 12903 Mass and Energy Balance

Synopsis

Mass and energy balances are the basis of process design. It introduces the principles relating to mass and energy conservation in systems in which chemical reactions and energy transfer occur. A mass and energy balances taken over the complete process will determine the quantities of energy and raw materials required and products produced. Balances over individual process units set the process stream flows and compositions. A good understanding of material balance calculations is essential in process design.

References

1. Luyben, W. L. and Wenzel, L. A. (1988). Chemical Process Analysis: Mass and Energy Balances. Prentice Hall International Series, the Physical and Chemical Engineering Sciences, 1st Edition. Prentice Hall.
2. Felder, R. M. and Rousseau, R. W. (2004). Elementary Principles of Chemical Processes, 3rd Edition. John Wiley & Sons Inc. Edward S. Rubin. Introduction to Engineering & the Environment. McGraw Hill; 2001. .Call No.: TA170 .R83 2001 N7
3. Henley, E. J. and Bieber, H. (1959). Chemical engineering calculations: mass and energy balances. McGraw-Hill.

DAK 12403 Fluid Mechanics

Synopsis

This course introduces students to process fluid mechanics, in which the emphasis is on those areas of fluid mechanics which are required for the solution of problems associated with process industries. Topics covered include introduction & basic concept, properties of fluids, pressure & fluid static, Bernoulli's & energy equations, momentum analysis of flow systems, internal flow.

References

1. Cengel, Yunus A. Fluid mechanics: fundamentals and applications. New York, NY : McGraw-Hill, 2014. Call Number: TA357 .C46 2014
2. Douglas, John F. Fluid mechanics. Harlow, England: Prentice Hall, 2011. Call Number: TA357 .D68 2011
3. White, Frank M. Fluid mechanics. New York: McGraw-Hill, 2011. Call Number: TA357 .D68 2011
4. Munson, Bruce R. Fluid mechanics. Hoboken, NJ. : Wiley, 2013. Call Number: TA357 .M86 2013
5. Fox, Robert W. Fluid mechanics. New York: John Wiley, 2012. Call Number: TA357 .F694 2012

DAK 12201 Chemical Engineering Technology Laboratory

Synopsis

This course aims to expose series of chemical engineering experiments during diploma's study may provide basic knowledge and skills of handling the experiments. Therefore, this course introduces students to carry out experiments using concepts and fundamental knowledge that learn theoretically during 1st of school. Furthermore, working in a team in order to get data and compile reports will be developed during this course. In Chemical Engineering Technology Lab, students will be exposed with four sets of experiments covering broader sense of fluid mechanics and pipe flow theory.

References

1. Cengel, Yunus A. Fluid mechanics: fundamentals and applications. New York, NY: McGraw-Hill, 2014. Call Number: TA357 .C46 2014
2. Experiment Handout for all experiments provided by PPD, UTHM.

DAS 11103 Technical Mathematics II

Synopsis

This course explains in detail topics related to calculus. The first topic is function. It includes a description of the relationship and functions, sketching graphs of algebraic functions, piecewise function, trigonometric functions, exponential functions, logarithmic functions and inverse functions. The second topic describes the limit of a function, one-sided limit, limit at infinity and continuity. Further topics include the differentiation techniques such as sum and differences, product and quotient rule. Next, it includes chain rule, differential of the exponential function, logarithms, implicit, parametric, and higher derivatives. The next topic is the differentiation applications involving rate of change, maximum and minimum problems, sketching graphs and L'Hopital rule. At the end of the course students understand the topic of integration as the inverse of differentiation. The techniques used are the method of substitution, by parts, partial fractions, rule schedule, numerical methods (Trapezoidal and Simpson rules) and improper integration of integration at infinity. Finally, the topic of integration of applications which is area, volumes by cylindrical shells and arc length.

References

1. Nafisah@Kamariah Md. Kamaruddin et al. (2013). Technical Mathematics II (DAS11103). Pusat Pengajian Diploma, UTHM Publisher.
2. Precalculus Mathematics for Calculus. Belmont, CA : Brooks/Cole. QA39.3. S73 2002
3. Howard Anton. (1994). Elementary Linear Algebra. New York. Wiley. QA184 .A57 1994.
4. Abd Wahid Md Raji (et al.). (2006). Calculus, UTM & PP Sains.
5. Anton, Bivens, I., Davis, S. Calculus. (7th ed). (2002). John Wiley & Sons, Inc, USA. [QA303 .A57 2002]
6. James, Glyn. Modern Engineering Mathematics third edition. (2001). Prentice Hall, Essex. [TA330 .J352 2001]
7. Finney, R.L., Weir, M.D. and Giordano, F.R. (2001). Thomas' Calculus 10th Edition, Addison Wesley Publishing, Boston.

DAK 11403 Organic Chemistry

Synopsis

Provides students with basic understanding in organic chemistry that govern the chemical reaction of reactant compounds based on the functional group present in molecules. Students will be firstly introduced to organic structures and bonding which cover the properties of compound that involve in vital biochemical pathways. Some topics that will be learned are concept of aromaticity, discussions on nomenclature, synthesis and reactions of hydrocarbons, alcohol & alkyl halides, aldehydes & ketones, carboxylic acids and amines. Student also will introduces with basic understanding in physical principles that govern the properties and behavior of chemical systems.

References

1. M. John; Organic Chemistry – A Biological Approach : 5th Edition; Thomas Brooks/Cole; 2007. Call Number: QD251.3 .M58 2007
2. Don W. Green & Robert H. Perry, Perry's Chemical Engineers' Handbook (Chemical Engineers Handbook), 8th Edition, McGraw-Hill, 2007 (Hardcover)
3. Dhinakar S. Kompala, Bioprocess Engineering: Fundamentals and Applications, 1st edition, CRC, 2009

4. David M. Himmelblau & James B. Riggs, Basic Principles and Calculations in Chemical Engineering, 7th Edition, Prentice Hall, 2004
5. Carey, Francis A. Organic Chemistry, New York, NY, McGraw-Hill, 2014. Wayne Ernest Wentworth. Physical Chemistry: a short course. Blackwell Science, 2000

DAK 10502 Engineering Drawing

Synopsis

This course explores drawing constructions using Computer-Aided Design and Drafting (CADD) software. Topics covered will include AutoCAD Basic Drawing, Orthographic Projection, Isometric Drawing, Oblique Projections and 3D Drawings.

References

1. Waren J. Luzadder, Jon H.Duff, Fundamental of Engineering Drawing With an Intriduction to Interactive Computer Graphics for Design and Production,11th edition, Prentice Hall, New Jersey, 1993.
2. Waren J. Luzadder, Jon H.Duff, Introduction to Engineering Drawing,2nd edition, Prentice Hall, New Jersey, 1993

DAK 12603 Analytical Chemistry

Synopsis

This course will emphasise on the various sample preparation techniques, the technique for producing the calibration curve and the proper technique for basic operation of selected instruments. The method for analysing the data as well as the preparing the analysis reports will be also covered. In this course, students will operate selected analytical instruments such as Ultra Violet-Visible (UV-VIS), Fourier Transform Infrared (FTIR), Gas Chromatography (GC), and High Performance Liquid Chromatography (HPLC).

References

1. Gary D. Christian. (2004). Analytical Chemistry, 6th. Ed.John Wiley & Sons, USA.,QD101.2 .C47 2004
2. Skoog, D. A. et al. (2000). Fundamentals of Analytical Chemistry, 8th. Ed.Thomson Learning,USA.,QD75.22 .F86 2004
3. J. Mendham et al. (2000). Textbook of Quantitative Chemical Analysis, 6th. Ed.Prentice Hall, London,QD101.V64 2000
4. Khopkar, S.M. (2009). Basic Concept of Analytical Chemistry,3rd Ed.London : New Age Science,QD75.2.K46 2009
5. Lewis, Jaylen (2012), Electro - Analytical Chemistry, London : Auris Reference, QD115 .E434 2012
6. Skoog, Douglas A (2014),Fundamentals of analytical chemistry, Belmont, CA : Cengage - Brooks/Cole, ISBN : 9780495558286, QD75.4.E4 .C76 2014
7. Crouch, Stanley R (2014), Applications of Microsoft Excel in Analytical Chemistry, Pacific Grove,Calif. : Brooks/Cole Cengage Learning, ISBN : 781285087955, QD75.22 .F86 2014
8. Barboz, Alistair (2012), Analytical chemistry, Nottingham : Auris Reference, ISBN : 9781781541425,QD75 .A52 2012

DAK 13102 Occupational Safety and Health

Synopsis

This course introduces students to knowledge and skills in occupational safety and health in workplace. Scope of study includes Health, Safety and Environment Managements: introduction to OSH, OSHA 1994 (Act 514), FMA 1967, EQA 1974, occupational safety and health management system, safety, health and environment culture; Risk Management and Assessment: introduction to risk management, risk assessment techniques, HIRARC; Physical Injury & Controls: introduction to physical injury, construction work, electrical work, mechanical work, chemical work; Health Hazards: introduction to health hazards & hygiene, chemical hazards, physical hazards, biological hazards, hygiene; Accident Investigation & Reporting: introduction, accident investigation, investigations and causes of incident, incident analysis and data collection method.

References

1. Occupational Safety and Health Act and Regulations. MDC Publishers Printer Sdn. Bhd. 2001. Call number: KPG1390.M34 2001 rw N2.
2. Factories and Machinery Act & Regulations. MDC Publishers Printer Sdn. Bhd. 2001. Call number: KPG1390.A31967 .A4 2001 rw N1.
3. Ismail Bahari (2006). Pengurusan Keselamatan dan Kesihatan Pekerjaan. Edisi ke-2. McGraw Hill Education (Malaysia). Call number: T55.I85 2006.
4. Davies, V. J. and Tomasin K. (2006). Construction Safety Handbook. 2nd ed. London: Thomas Telford. Call number: TH443.R43 2006.
5. Anton, Thomas J. (2009). Occupational Safety and Health Management. 3rd ed. New York: McGraw- Hill. Call number: T55.A57 1989

DAK 20703 Thermodynamics

Synopsis

This course aims to connect the principles, concepts, and laws of classical and statistical thermodynamics to applications that require quantitative knowledge of thermodynamic properties from a macroscopic to a molecular level. The course also covers the application of thermodynamics to phase equilibria, which is the basis of most separation processes. The basic concept of pure substances, covering topics on thermodynamics property of pure substances, phase (Pvt) diagram and ideal gas law also included to enhance students' understanding of the phase change and property data which is important in thermodynamic calculations. Topics covered include Thermodynamic Systems, The First Law of Thermodynamics, The Second Law of Thermodynamics, The Entropy, Heat Effect and Application of Thermodynamic.

References

1. Smith, J. M., Van Ness, H. C., Abbott, M. M., Introduction to Chemical Engineering Thermodynamics, 7th edition, New York: McGraw-Hill, 2005.
2. Sandler, S. I., Chemical and Engineering Thermodynamics, 4th ed., Hoboken, NJ: John Wiley, 2006.
3. Felder, Richard M., Rousseau, Ronald W., Elementary Principles of Chemical Processes, 3rd ed., New York: John Wiley, 2000.
4. Cengel, Y. A., & Boles M. A., Thermodynamics : An Engineering Approach, 8th Edition. New York. McGraw-Hill, 2014.
5. Gmehling, J., Kolbe, B., Kleiber, M., & Rarey, J., Chemical Thermodynamics for Process Simulation. Weinheim, Germany : Wiley-VCH Verlag GmbH, 2012.

DAK 23803 Introduction to Biotechnology

Synopsis

The aim of this module is to provide students with the fundamental knowledge in biotechnology. Students will learn basic of cell growth and gene manipulation.

References

1. Smith, John E., Biotechnology, 5th Edition, Upper Sadle NJ: Pearson, 2009, [TP248.2. S64 2009]
2. Stahl, Ulf., Food biotechnology, Berlin: Springer, 2008, [TP248.65. F66 .F66 2008]
Latha, C. D. Swarna., Microbial biotechnology, New Delhi: Discovery Publishing, 2007, [TP248.27. M53.L37 2007]
3. Roy, Darbeshwar., Biotechnology, Oxford, UK: Alpha Science, 2010, [TP248.2. R69 2010]
4. Borem, Aluizio., Understanding biotechnology, Upper Saddle, NJ : Prentice Hall, 2003, [TP248.215. B67 2003]

DAS 21002 Technical Matematics III

Synopsis

This course covers topics of vector that is dot and cross product, line and plane equation in R^3 . Then, they will learn the complex number which consist of arithmetic operations, polar form, Euler form and De Moivre theorem. After that, students are introduced to basic statistics by finding measure of central tendency (mean, mode, median) and measure of dispersion (variance and standard deviation) for grouped and ungrouped data. Students also learn how to find probability for the independent event, conditional probability and to solve the problem by using Bayes theorem. They also learn about the random variables which covered discrete and continuous random variables and to find the expected value and variance. Next, students solved real life problem based on probability distributions that is Binomial distribution, Poisson distribution and Normal distribution.

References

1. Nafisah@Kamariah Md. Kamaruddin el. al. (2013). *Technical Mathematics II (DAS1103)*. Pusat Pengajian Diploma, UTHM Publisher.
2. Wadpole - Mayer. *Probability And Statistics For Engineers And Scientists*. Prentice Hall. 1993.
3. Douglas C. Montgomery & George C. Runger (2002). *Applied Statistics and Probability for Engineers*. John Wiley.
4. James, S. (2002). *Precalculus Mathematics for Calculus*. Belmont, CA: Brooks/Cole. Howard, A. (1994). *Elementary Linear Algebra*. New York. Wiley.
5. Howard, A. (1994). *Elementary Linear Algebra*. New York. Wiley.

DAK 23503 Environmental Engineering Technology

Synopsis

Environmental engineering technology provides students with an understanding of the fundamentals of air, land and water pollution as well as the technology for control.

Noise pollution and the treatment of hazardous waste are also covered alongside an introduction to local environmental legislation and the ISO14001 environmental management system.

References

1. Davies, M.L et. al. Principles of Environmental Engineering and Science; McGraw Hill; 2004.Call No.: TD145 .D38 2004
2. Vesilind, P. Aarne Heine, Lauren G. Morgan, Susan M. Introduction to environmental engineering .Call No.: TD145 .V47 2010
3. Edward S. Rubin. Introduction to Engineering & the Environment. McGraw Hill; 2001.Call No.: TA170 .R83 2001 N7
4. Bishop P.L. Pollution Prevention: Fundamentals and Practice; McGraw Hill; 2000. Call No.: TD897 .B57 2000
5. Cheremisinoff, Paul N.Handbook of water and wastewater treatment technology. Call No.: TD430 .C53 1995 N1Brian S. Mitchell. (2004). An introduction to Materials Engineering And Science for Chemical and Materials Engineers. Hoboken, NJ: John Wiley. Call Number: TA403 .M57 2004

DAK 21402 Chemical Engineering Technology Project I

Prerequisite Course(s): Has taken 40% of total credit for convocation

Synopsis

The objective of the course is to expose students with real working environment in chemical engineering field. This course emphasize on innovation, simplification of chemical processes, process development, manufacturing practices and processes, alternative chemical processes and manufacturing technologies in chemical engineering. Generally, the final output of the project can be in a form of new products, low cost products, newly proposed design process, new techniques of product synthesis, or newly proposed or actual solution via chemical engineering case studies. It is hope to provide a structured approach to carry out a diploma project, which will be carried out in groups based on the courses undertaken by the students. The actual direction and details on the project will be determined by the Centre for Diploma Studies.

References

1. Thesis writing guideline, UTHM.
2. Guideline for Implementation of Diploma Engineering Project, UTHM.
3. Books, journals and other information which relates with the research project.

DAK 20803 Wastewater Treatment Technology

Synopsis

Wastewater treatment covers the mechanisms and processes used to treat waters that have been contaminated in some way by anthropogenic industrial or commercial activities prior to its release into the environment or its re-use. This course is an overview of technology and engineering approaches to protecting water quality with an emphasis on fundamental principles. Theory and conceptual design of technology systems for treating municipal wastewater are discussed, as well as reactor theory, process kinetics, and models. Physical, chemical, and biological processes are presented, including sedimentation, filtration, biological treatment, disinfection, and sludge processing. This course covers the technology related to industrial wastewater analysis and treatment.

Finally, there is discussion of engineered and natural processes for wastewater treatment.

References

1. Mara, D. Domestic Wastewater Treatment in Developing Countries. London, UK: Earthscan, 2003. ISBN: 1844070190.
2. Far more general than the title implies, this reference provides very clear descriptions of the characteristics of wastewater and the fundamentals of treatment.
3. Viessman, W., Jr., and M. J. Hammer. Water Supply and Pollution Control. 7th ed. Pearson Education, Inc., Upper Saddle River, NJ: Pearson Prentice Hall, 2005. ISBN: 0131409700.
4. Tchobanoglous, G., F. L. Burton, and H. D. Stensel. Wastewater Engineering: Treatment and Reuse. 4th ed. Metcalf and Eddy Inc., New York, NY: McGraw-Hill, 2003. ISBN: 0070418780.
5. MWH Staff. Water Treatment: Principles and Design. 2nd ed. New York, NY: Wiley, 2005. ISBN: 0471110183.

DAK 23703 Fermentation Process Technology

Synopsis

Fermentation technology is the components to encompass complete coverage of all activities starting right from upstream, mid-stream to downstream. However greater emphasis is given on the operation, maintenance of the fermenter. Most fermentation practical involve a lot of upstream and downstream preparations and the actual fermentation process is continuous running from hours into days.

References

1. Manish L. Srivastava (2008). Fermentation Technology. Oxford, UK: Alpha Science. Call Number: QR151 .S64 2008.
2. El-Mansi et al. (2007). Fermentation Microbiology and Biotechnology. Boca Raton: CRC Press. Call Number: TP248.27.M53 .F47 2007.
3. McNeil,B & Harvey,L.M (Eds). (2008). Practical Fermentation Technology. West Sussex: John Wiley. Call Number: TP156.F4 .M63 2008.
4. Leigh, J. R.; Modelling and Control of Fermentation Processes; London: P. Peregrinus; 1987. Call Number: TP156.F4 .L44 1987
5. Stanbury, P.F &Whitaker, A; Principles of Fermentation Technology; Pergamon Press, Oxford UK; 1989
6. Henry, C, Vogel & Celeste L. Todaro. (1996). Fermentation and Biochemical Engineering Handbook. 2nd Edition.

DAK 22303 Chemical Reaction Engineering

Synopsis

This course aims to connect the principles, concepts, and laws of mole balances, stoichiometry, isothermal and nonisothermal to the applications in reactor design. The course also covers the reactor safety and troubleshooting, which is the basis in reactor technology. The basic concept of Phase Equilibrium and Chemical Reaction Equilibrium are also included to enhance students' understanding of the relationship among variables describing systems. Topics covered include an introduction to reactor design, reactor scale up, modeling, reactor safety and troubleshooting.

References

1. Fogler, H.S. and Gurmen, M.N., Essential of Chemical Reaction Engineering, 3 rd ed., Prentice Hall, 2005.
2. Lanny, D.S. (2005). The Engineering of Chemical Reaction, Oxford University Press, USA. Call Number: TP157 .S35 2005
3. Tapio O. Salmi, Jyri-Pekka Mikkola, Johan P. Warna. (2011). Chemical Reaction Engineering and Reactor Technology. Boca Raton: CRC. Call Number: TP157 .S24 2011
4. H. Scott Fogler. (2006). Elements of Chemical Reaction Engineering. Upper Saddle River, NJ: Prentice Hall. Call Number: TP157 .F63 2006
5. Mark E. Davis & Robert J. Davis. (2003). Fundamentals of Chemical Reaction Engineering. Boston: McGraw-Hill. Call Number: TP155.7 .D38 2003
6. Octave Levenspiel. (1999). Chemical Reaction Engineering. New York: John Wiley. 3rd ed. Call Number: TP157 .L48 1999

DAK 21803 Chemical Engineering Technology Project II

Prerequisite Course(s): DAK 21402 Chemical Engineering Technology Project I

Synopsis

The objective of the course is to expose students with real working environment in chemical engineering field. This course emphasize on innovation, simplification of chemical processes, process development, manufacturing practices and processes, alternative chemical processes and manufacturing technologies in chemical engineering. Generally, the final output of the project can be in a form of new products, low cost products, newly proposed design process, new techniques of product synthesis, or newly proposed or actual solution via chemical engineering case studies. It is hope to provide a structured approach to carry out a diploma project, which will be carried out in groups based on the courses undertaken by the students. The actual direction and details on the project will be determined by the Centre for Diploma Studies.

References

1. Thesis writing guideline, UTHM.
2. Guideline for Implementation of Diploma Engineering Project, UTHM.
3. Books, journals and other information which relates with the research project.

DAK 22803 Process Control and Instrumentation

Synopsis

This course will cover the process and instrumentation involved in unit operation of chemical processes. This course will also emphasize on computer aided measurement and control software, distributed control system and programmable logic controller

References

1. B. Wayne Bequette, 2006. Process Dynamics: Modeling, Analysis and Simulation, Prentice Hall, Rensselaer Polytechnic Institute, NY
2. Constantinides, A. and Mostoufi, N. 2007. Numerical Methods for Chemical Engineers with MATLAB Applications, Upper Saddle River, NJ: Prentice Hall PTR.
3. Steven C. Chapra & Raymond P. Canale, 2006. Numerical methods for engineers: with software and programming applications, 5th Edition, McGraw Hill.
4. Steven C. Chapra, 2006. Applied Numerical Methods with Matlab for Engineers and Scientist, 2nd Edition, McGraw Hill

DAK 13201 Scientific Writing

Synopsis

Scientific writing provides students learn to apply multiple theories, concepts, and techniques for creating and evaluating written communication. Students learn to write effectively for diverse audiences within a specific area or discipline using appropriate standards and conventions. Students learn to apply critical thinking to writing and writing process, including revision.

References

1. White, Ron. Process Writing. London : Longman, 1991. ISBN: 9780582024441
2. Seely, John. Writing Reports. Oxford, NY : Oxford University, 2002. ISBN: 9780198662839
3. Rosenwasser, David. Writing Analytically. Boston, MA : Thomson Wadsworth, 2006. ISBN: 9781413010121

DAK 23903 Separation Engineering Technology

Synopsis

Separation engineering technology deals with the scientific and engineering technology principles involved in large-scale separation and purification of chemical products. It is a key component of most chemical engineering programs. Topics covered include distillation column, evaporation, extraction, absorption and humidification..

References

1. Geankoplis, C. J. (2015). Transport Processes and Separation Process Principles. 4th ed. Pearson Higher Ed USA. Call Number: TP156.T7 .G42 2003.
2. Geankoplis, C. J., Hersel, A. A. & Lepek, D. H. (2018). Transport Processes and Separation Process Principles. 5th ed. Pearson Higher Ed USA. Call Number: TP156.T7 .G42 2003.
3. Seader, J.D., Henley, E.J. & Roper, D.K. (2015). Separation Process Principle. 4th ed. John Wiley & Sons, Inc., New York. Call Number: TP156.S45 .S36 2011

DAK 31511 Industrial Training

Prerequisite Course(s): Has taken 60% of total credit for convocation

Synopsis

Students has to undergo an industrial training programme as a trainee assistant engineer in any suitable chemical engineering technology for 22 weeks duration. During the period, the industrial supervisor will assess the student performance and at least once by the an appointed supervisor form the Centre of Diploma Studies. The students will be trained by the agency and organization in site supervision, planning, management, design, field investigation and assessment for a chemical engineering technology project.

References

1. Industrial Training Guidebook, UTHM

Career and Further Education Prospect

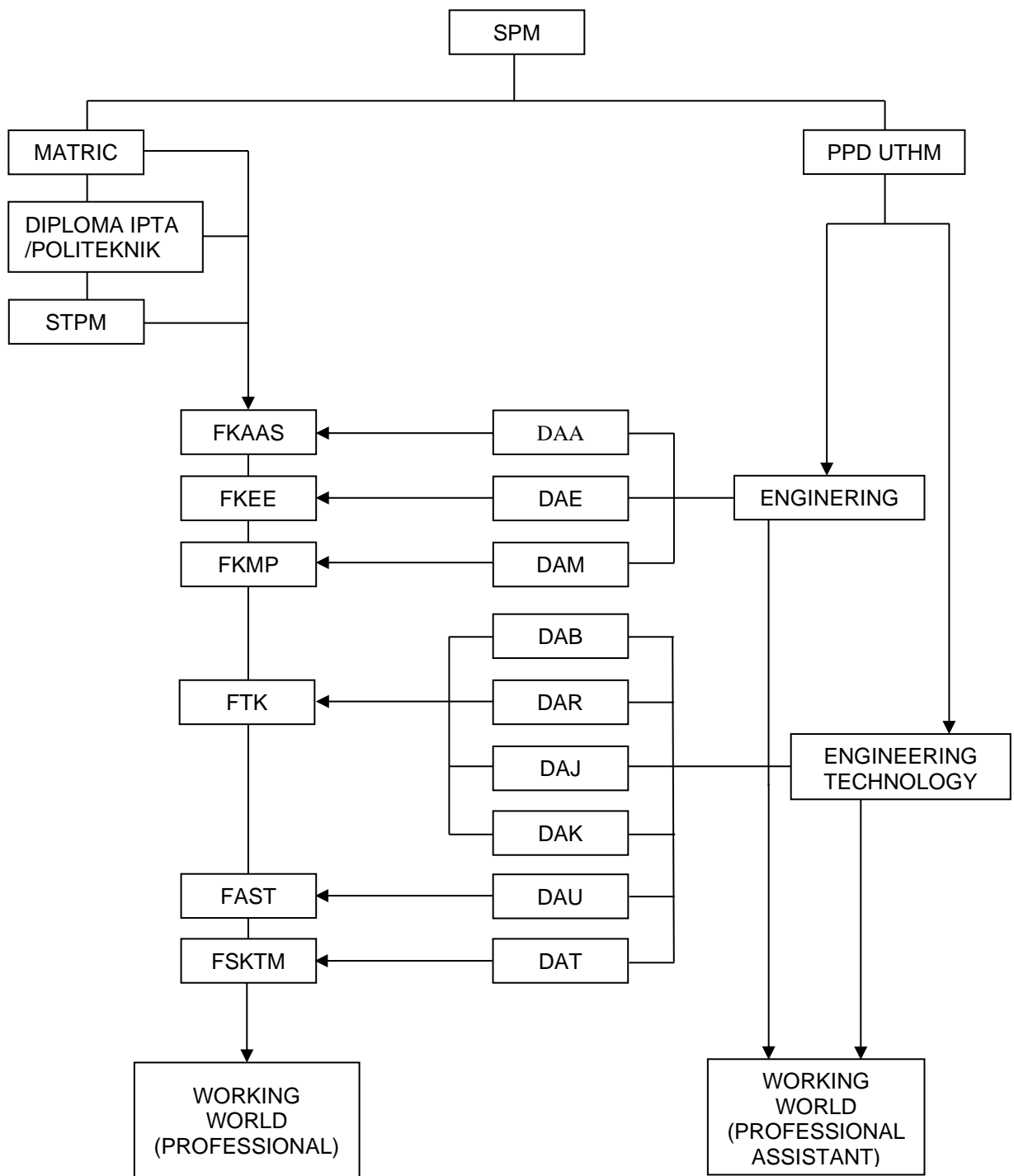
Chemical Engineering Technology engineers are involved with the design, development and production of a huge range of projects in the chemical and environment.

Their role is central to ensuring the safe, timely and well-resourced completion of projects in many areas, including:

- Production plant;
- Waste management;
- Design and Project development
- Chemical Laboratory

Figures below show examples of jobs and career pathway in Centre of Diploma Studies UTHM and according to Malaysian Qualification Framework

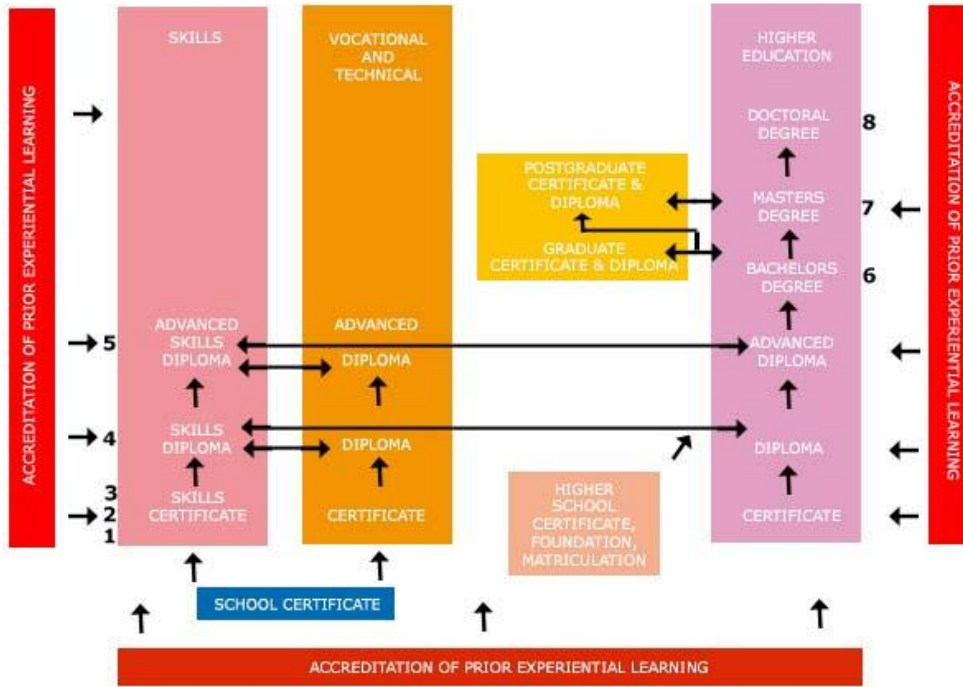




Legend:

- DAA – Diploma in Civil Engineering
- DAB – Diploma in Civil Engineering Technology
- DAE – Diploma in Electrical Engineering
- DAR – Diploma in Electrical Engineering Technology
- DAM – Diploma in Mechanical Engineering
- DAJ – Diploma in Mechanical Engineering Technology
- DAT – Diploma in Information Technology
- DAK – Diploma in Chemical Engineering Technology
- DAU – Diploma in Applied Sciences

MQF BASED ON QUALIFICATION LEVEL AND EDUCATIONAL PATHWAY



Malaysian Qualification Framework

**MALAYSIAN QUALIFICATIONS FRAMEWORK:
QUALIFICATIONS AND LEVELS**

MQF Levels	Sectors			Lifelong Learning
	Skills	Vocational and Technical	Higher Education	
8			Doctoral Degree	Accreditation of Prior Experiential Learning (APEL)
7			Masters Degree	
			Postgraduate Certificate & Diploma	
6			Bachelors Degree	
			Graduate Certificate & Diploma	
5	Advanced Diploma	Advanced Diploma	Advanced Diploma	
4	Diploma	Diploma	Diploma	
3	Skills Certificate 3	Vocational and Technical Certificate	Certificate	
2	Skills Certificate 2			
1	Skills Certificate 1			

Malaysian Qualification Framework



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