UTHM
Universiti Tun Hussein Onn Malaysia

ACADEMIC PROFORMA 2018 / 2019

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DIPLOMA IN CHEMICAL ENGINEERING TECHNOLOGY

Pusat Pengajian Diploma
Universiti Tun Hussein Onn Malaysia
86400, Parit Raja, Batu Pahat, Johor

Technically Above The Rest

Information contained in this proforma is true at the time of printing and the University has the right to make any ammendment according to needs.

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Universiti Tun Hussein Onn Malaysia
August 2018

Contents

Foreword from the Vice Chancellor

Assalamualaikum Warahmatullahi Wabarakatuh and Greetings

Congratulations and welcome to all new students. We appreciate your trust in us and thank you for choosing to be with UTHM in continuing your endeavour for success in your future careers and prosperous lives.

In line with the message given by the YBhg. Minister Ministry of Education Malaysia that wish to transform the process of teaching and learning more flexible, organic, dynamic and effective, several initiatives and innovations in delivery methods have been and will be implemented at UTHM by combining conventional methods with on-line / virtual meetings by introducing Full Online Classroom (FOC), Smart Class Room, Flip Learning, Massive Open Online Courses (MOOC) and more. In fact, the approach through Science, Technology, Engineering and Mathematics (STEM) will be enhanced to uphold the science and technology in line with the development of the Industrial Revolution 4.0. Additionally, elements such as fun, happiness, affection and courtesy will be applied in all curriculum at UTHM to ensure learning and teaching processes can achieve the University's aspirations in producing emotional, mental and physical equilibrium students based on the paradigm of tauhid.

For your knowledge, the top University's leadership continues to seek, design and adapt effective and efficient approaches that can have a big impact towards making UTHM a renowned Higher Education Institution. The achievement of four stars in the "QS STAR RATING 2017" and UTHM was recognized as Top 300 in QS World University Ranking by Subject 2017 in Mechanical, Aeronautical and Manufacturing Engineering and Electrical and Electronic Engineering categories, proving that UTHM continues to create excellence. These achievements convince us that they were the results of our effort in continuously strengthening and aligning the University mission and vision.

Lastly, I believe that you are the ones who will continue the University tradition of excellence. Also, when you graduate later you will be members of the community who are not only able to apply knowledge that has been acquired but also able to contribute efforts, deeds and expertise for the glory of Religion, Nation and Country.

"WITH WISDOM WE EXPLORE"

Your Sincrely,

PROFESSOR Ts. DR. WAHID BIN RAZZALY
Vice-Chancellor
Universiti Tun Hussein Onn Malaysia

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

Assalammualaikum Warahmatullahi Wabarakatuh and Greetings

It gives me great pleasure to congratulate all the new students who have been successfully selected to continue their studies in Universiti Tun Hussein Onn Malaysia (UTHM) for this 2017/2018 session. Congratulations to the Centre for Academic Development and Training for publishing this proforma that will function as a guide for students to plan their studies from the first semester until the end.

For your information, higher education in Malaysia has evolved from teacher/lecturer-centred learning to student-centred learning. Several initiatives have been conducted by the Ministry and the University to develop holistic graduates who are balanced in their knowledge and morale. In order to achieve UTHM mission and vision, a number of initiatives have been implemented such as introducing the iCGPA system, which is an integrated mechanism that combines assessment, achievement report and student's development that takes into account improvements in manners, knowledge and performance. Additional measures have also been taken to upgrade the teaching and learning quality by incorporating elements of Industry 4.0 and 2U2i in the curriculum content. This is to ensure the academic programmes offered in UTHM remain relevant to the requirements of the industry and current job market. In addition, knowledge and experience sharing sessions by local and international industrial leaders with students and the local community are carried out through the CEO@Faculty programme.

Other than that, online learning known as Massive Open Online Course (MOOC) has been introduced. The Full Online Classroom (FOC), which is implemented every semester, serves as a new initiative to give students the opportunity to explore knowledge without having to come to lecture rooms. Students also have the opportunity to leave the University for a certain period of time to participate in the Gap Year programme, which gives them the opportunity for self-reflection and exploration through volunteerism, entrepreneurship and sports programmes.

I hope the variety of initiatives that have been and will be implemented by UTHM will provide you with valuable experiences in your endeavour for knowledge and develop you to be holistic and balanced students. To ensure UTHM aspirations are achieved, it is hoped that this proforma will help you plan your studies and achieve the best results and attain excellence. Lastly, I wish you all the best and pray for your success in your studies here, with the hope that you will be able to contribute to the development of Religion, Nation and Country.

"WITH WISDOM WE EXPLORE"

Your Sincrely,

PROFESSOR DR. ISMAIL BIN ABDUL RAHMAN
Deputy of Vice Chancellor (Academic and International)
Universiti Tun Hussein Onn Malaysia

Foreword from the Dean of Centre for Diploma Studies

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 UTHM. 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 science and technology.

As a centre, we're responsible for running and operating the diploma programmes for UTHM and our centre has a clear vision and mission in developing and strengthening all the diploma programmes offered. Currently, we have nine (9) diploma programmes being offered and the number of programmes will be increasing in the near future in phase to the increase needs of the nation manpower. I believe you have chosen a suitable programme that suits your qualifications and dreams. Furthermore, with the study duration of 2 years and 9 months the student will be successfully completed their studies in a shorter time and can be offered a direct entry to the bachelor's degree programmes in UTHM with respective to the terms and condition imposed.

In terms of infrastructure, the teaching and learning facilities provided for UTHM have been recognised to fulfil the standard required by the accreditation bodies. In addition, the rapid development of the campus UTHM now will ensure comfort to students with various facilities including a library, residential colleges, cafeterias, sports activities, networking, wireless internet and other amenities.

I hope that as a candidate of the diploma programme in UTHM, you will use this proforma as a guide to select a suitable course which is in line with your future needs. For the new student who will be pursuing the diploma programme in UTHM, I strongly advised to using this document to plan and thus completing your diploma studies with excellence.

Wishing You Success.

Your Sincrely,

ASSOCIATE PROFESSOR 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 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 of Johor
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
Chief Secretary to the Government of Malaysia

University Board of Directors

Chairman

Members

YBhg. Professor Ts. Dr. Wahid bin Razzaly
Vice-Chancellor
Universiti Tun Hussein Onn Malaysia

YB Dato' Haji Nooh bin Gadot
Advisor, Majlis Agama Islam Johor

YBhg. Datuk Dr. Pang Chau Leong
Alumni Representative, Universiti Tun Hussein Onn Malaysia

YBhg. Dato' Zainal Abidin bin Mat Nor
Deputy Secretary of Public Asset Management Division, Ministry of Finance

YBhg. Datuk Mat Noor bin Nawi
Chairman, Exim Bank Berhad

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

YBhg. Professor Dr. Mustafa bin Mat Deris
Professor Faculty of Computer Science and Information Technology
Universiti Tun Hussein Onn Malaysia

YBhg. Professor Dr. Arham bin Abdullah
Director, Industrial Relation Division, Department of Higher Education
Ministry of Higher Education Malaysia

Alternative Member

Mdm. Mazula binti Sabudin
Director of Student Enrollment Management Division
Department of Higher Education
Ministry of Higher Education Malaysia

Secretary

Mr. Abdul Halim bin Abdul Rahman
Registrar
Universiti Tun Hussein Onn Malaysia

Senate Members

Chairman

Professor Ts. Dr. Wahid bin Razzaly
Vice Chancellor

Members

Professor Dr. Ismail bin Abdul Rahman
Deputy Vice Chancellor (Academic and International)

Professor Ts. Dr. Ruzairi bin Abdul Rahim
Deputy Vice Chancellor (Research and Innovation)

Associate Professor Dr. Asri bin Selamat
Deputy Vice Chancellor (Student Affairs and Alumni)

Professor Dato' Dr. Abdul Razak Hj. Omar
Provost of UTHM Pagoh Branch Campus

Associate Professor Dr. Wan Fauziah binti Wan Yusoff
Assistant Vice-Chancellor (Financial Sustainability)

Associate Professor Dr. Afandi bin Ahmad
Assistant Vice-Chancellor (Strategic Planning and Corporate Relations)

Professor Dr. Ahmad Tarmizi bin Abd Karim
Dean Centre for Graduate Studies

Associate Professor Dr. Abd Halid bin Abdullah
Dean Faculty of Civil and Environmental Engineering

Professor Dr. Hashim bin Saim
Dean Faculty of Electrical and Electronic Engineering

Associate Professor Dr. Shahruddin bin Mahzan @ Mohd Zin
Dean Faculty of Mechanical and Manufacturing Engineering

Associate Professor Dr. Mohd Lizam Bin Mohd Diah
Dean Faculty of Technology Management and Business

Professor Dr. W Mohd Rashid Bin W Ahmad
Dean Faculty of Technical and Vocational Education

Associate Professor Dr. Nazri bin Mohd Nawi
Dean Faculty of Computer Science and Information Technology

Associate Professor Dr. Mohd Kamarulzaki bin Mustafa
Dean Faculty of Applied Science and Technology

Associate Professor Dr. Ishak bin Baba
Dean Faculty of Engineering Technology

Associate Professor Dr. Mohamad Zaky bin Noh
Dean Centre for Diploma Studies

Professor Dr. Azme bin Khamis
Director Centre for Academic Development and Training

Professor Dr. Rosman bin Md. Yusoff
Dean Centre for liberal and co-currricular studies

Professor Dr. Noraini Binti Kaprawi
Director International Office

Ir. Shamrul-Mar bin Shamsuddin
Director Development and Mainteance Office

Professor Ir. Dr. Amir Hashim bin Mohd Kassim
Faculty of Civil and Environmental Engineering

Professor Dr. Sulaiman bin Hj Hassan
Faculty of Mechanical and Manufacturing Engineering

Professor Dr. Maizam binti Alias
Faculty of Technical and Vocational Education

Professor Dr. Jailani bin Md Yunos
Faculty of Technical and Vocational Education

Professor Dr. Hj. Mustafa bin Mat Deris
Faculty of Computer Science and Information Technology

Professor Dr. Rosziati binti Ibrahim
Faculty of Computer Science and Information Technology

Professor Datin Dr. Maryati binti Mohamed
Faculty of Applied Science and Technology

Professor Dr. Rosman bin Md Yusoff
Faculty of Applied Science and Technology

Mr. Abdul Halim bin Abdul Rahman
Registrar/Secretary

Mdm. Azizah binti Nasri
Bursary

Mr. Hj. Bharun Narosid bin Mat Zin
Chief Librarian

Centre for Diploma Studies

Centre Vision

Excellent in providing multidisciplinary education in science and technology

Centre Mission

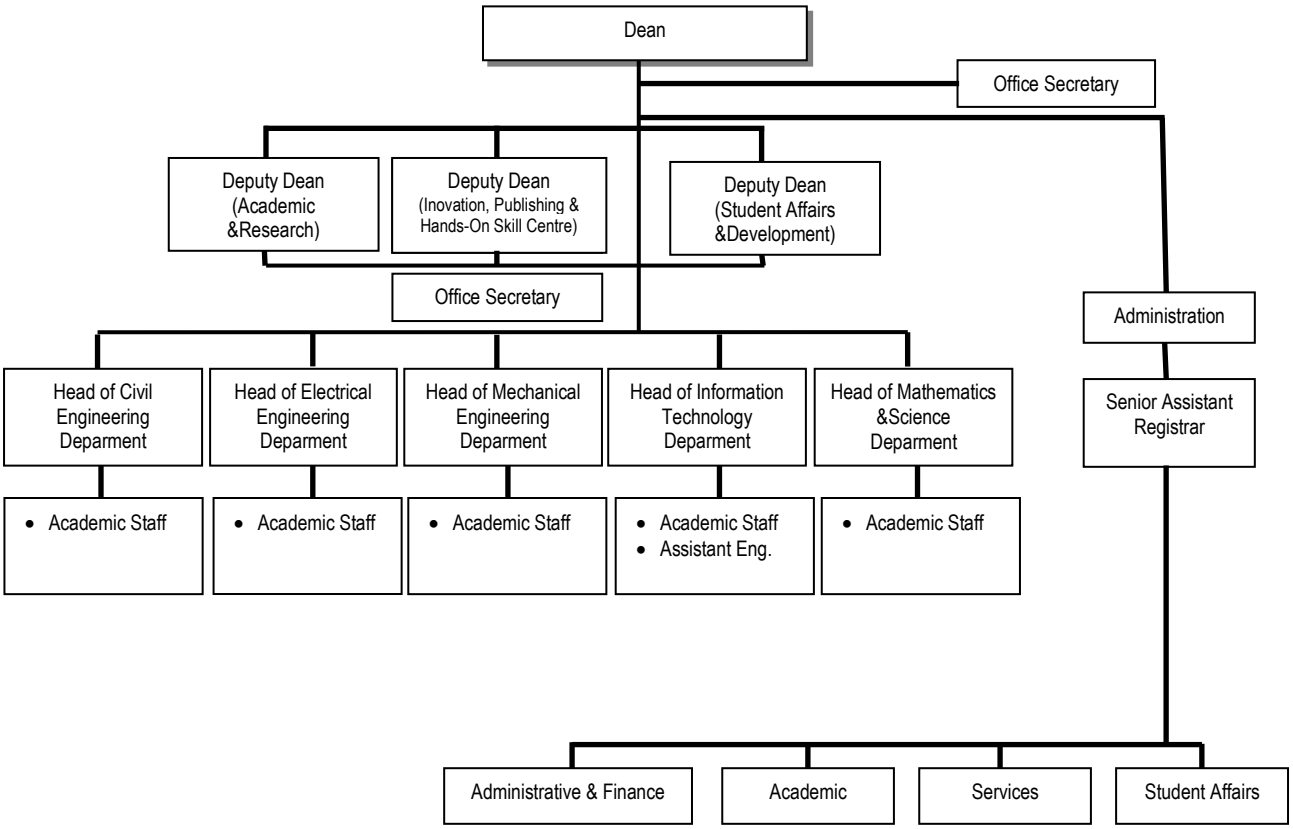
Producing graduates who contribute to national development through a holistic academic program

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 the programmes were than 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 competativeness 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 achieve equilibrium in the academic excellence, co-curricullum 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 nine (9) 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 Science and Mathematics

External Examiner

Prof Madya Ir Dr. Sharifah Rafidah Binti Datu' Wan Alwi
PhD (Chemical Engineering)(UTM)
BSc (Hons.)(Chemical Engineering) (UMIST, UK)

Industrial Advisor

Encik Mohamad Zuki Wan Abdullah
Vice President/ Cheif Executive Officer
Felda-Johor Bulkers
FGV

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 and Research)
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 Development)
Mdm. Mariam binti Abdul Hamid
Master of Information Technology Management (UTM), Bachelor Degree of Information Technology (UTM), Diploma in Electronic (UTM)

Deputy Dean (Development, Research and Publication)
Hj. Jahaya bin Kesot
MSc. (Civil Engineering) (UTHM), BSc. (Civil Engineering) (Univ. of Miami, USA)

Office Secretary
Rusnani binti Saji
Dip. (Secretarial Science) (Politeknik Sultan Ahmad Shah, Kuantan)

Senior Assistant Registrar
Norfaizah binti Sai
Bachelor in Human Resources (UPM)

Assistant Administrative Officer (Academic and Research)
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)

Administrative Assistant (Clerical & Operation) Student Affairs and Development
Jaiganesh a/l Jaganathan
BSc (Management) (OUM), SPM (SMK Dato Bentara Luar)

Administrative Assistant (Clerical & Operation) Administrative and Finance
Ismade bin Niam
STPM (SM Tun Sardon Rengit)

Administrative Assistant (Clerical & Operation) Services Unit
Dorazi bin Md Noh
SC/MCE/SPM/SPVM (SEK. MEN. Dato Sulaiman)

Administrative Assistant (Clerical & Operation) Academic and Research
Abu Bakar Siddeq bin Abd Jabar
SC/MCE/SPM/SPVM (SMK Tinggi Batu Pahat)

Administrative Assistant (Clerical & Operation) Academic and Research
Razali bin Ahmad
SC/MCE/SPM/SPVM, SMK Tinggi Batu Pahat

General Office Assistant
Dayang Fatimah binti Pohhaini
STPM (SM Munsyi Sulaiman), SPM (SMK Datin Onn Jaffar)

Department of Science and Mathematics

Academic Staff

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

Hj. Zulkifli bin Senin
MEd. (Educational Technology) (UTM), BSc. & Ed. (Chemistry) (UTM), Dip.Sc & Ed. (Chemistry) (UTM)

Hj. Suhaimi bin Makminin
MSc. (Chemistry Education) (UTM), BSc. (Chemistry) (UKM), Dip.Ed. (Chemistry) (UKM)

Assoc. Prof. Hjh. Nafisah @Kamariah binti Hj Md Kamaruddin
MSc. (Algebra & Statistics) (Ohio University, USA), BSc. (Mathematics) (University of Brigeport, USA)

Pn. Aida binti Muhamad
MEng (Civil Engineering) (UTHM), BSc.(Hons). (Chemistry) (UKM)

Hj. Mohd Lokoman bin Kasiran
MSc (Chemical Physics) (East Anglia, UK), BSc. (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)

Cik Nurhana binti Mohamad
MSc. (Mathematics) (UTM), BSc. (Industrial Mathematics) (UTM)

Pn. Jamilah binti Mohd Ghazali
MSc (Applied Mathematics)(UiTM), BSc(Mathematics Management)(UiTM)

Pn. Dilaeleyana binti Abu Bakar Sidik
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)

Cik 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)

Cik Nuramirah binti Juma'at.
MSc. (Mathematics Engineering) (UTM), BSc. (Mathematics) (UTM)

Pn. Norhaliza binti Abu Bakar
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 Aripen
MEng (Chemical) (UKM), BEng (Chemical)(UiTM)

Nurul Izzati binti Mohd Ismail
MEng (Bioprocess) (UTM), BEngTech (Biosystem)(UniKL).

Cik Basirah binti Fauzi
MPhil (Chemical Engineering) (UTM), BEng (Chemical-Bioprocess)(UTM)

Dr. Hazlini Binti Dzinun
PhD (Gas Engineering) (UTM), MEng (Civil-Environmental Planning) (UTM), BEng (Chemical)(UTM)

Programme Name

Diploma in Chemical Engineering Technology (DAK)

ProgrammeAims

Chemical Engineering Technology Diploma Program is to produce semi-professional chemical engineers.

Programme Educational Objectives (PEO)

These are the PEOs for Diploma in Chemical Engineering Technology:

PEO 1	Apply the theoretical and practical knowledge in solving problems of chemical engineering technology.
PEO 2	Demostrate professional and ethical attitude effectively and sustainably in chemical engineering technology field.
PEO 3	Interact with professionals and community effectively to carry out responsibilities leadership in an organization.
PEO 4	Develop career path and entrepreneurship skill by lifelong learning.

Programme Learning Outcomes (PLO)

These are the PLOs for Diploma in Chemical Engineering Technology:

PLO 1	Apply knowledge of mathematics, science and chemical engineering technology fundamentals to wide practical procedures and practices.
PLO 2	Apply appropriate techniques, resources, and modern engineering to well-defined chemical engineering technology problems
PLO 3	Communicate effectively with the engineering technology community and diverse society.
PLO 4	Conduct investigations of well-defined problems by identify and provide creative, innovative and effective solution in chemical engineering technology
PLO 5	Act effectively as an individual and as a member or leader in technical teams
PLO 6	Recognize the requirements for professional development and engaging the needs of lifelong learning
PLO 7	Demonstrate a consciousness of business practices and entrepreneurial competencies
PLO 8	Establish an understanding of professional ethics, responsibilities and norms of technician practices.
PLO 9	Practice an understanding of engineering management principles and apply to manage multidisciplinary projects
PLO 10	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 11	Distinguish and analyse well defined problem
PLO 12	Comprehend and evaluate the impact of engineering technician practices for sustainable development
PLO 13	Imply an awareness and consideration for societal, health, safety, legal and cultural issues and their consequent responsibilities

Curriculum

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

Year	Semester	Course Code	Courses	Credit	Total
1	0	UQU 10403	Introduction to Nationhood and Malaysia Development	3	7
		UQI 10402/202	Introduction to Islamic Studies/Moral Studies	2	
		UWB 10*02	Foreign Language	2	
	I	UHB 10302	English for Academic Survival	2	18
		UQ* 1***1	Co-Curriculum I	1	
		DAS 11003	Technical Mathematics I	3	
		DAK 13003	Physics for Engineering technology	3	
		DAK 12302	Foundation of Chemical Engineering Technology	2	
		DAK 12201	Chemical Engineering Technology Laboratory	1	
		DAK 12903	Mass and Energy Balance	3	
		DAK 12403	Fluid Mechanics	3	
	II	UHB 20302	Academic Communication	2	18
		UQ* 1***1	Co-Curriculum II	1	
		UQI 10502	Theology and Science	2	
		DAK 12603	Analytical Chemistry	3	
		DAS 11103	Technical Mathematics II	3	
		DAS 13102	Occupation Safely and Health	2	
		DAK 10502	Engineering Drawing	2	
		DAS 11403	Organic Chemistry	3	
2	I	DAS 21002	Technical Mathematics III	2	18
		UHB 30502	English for Workplace	2	
		DAK 23803	Introduction to Biotechnology	3	
		DAK 20603	Thermodynamic	3	
		DAK 23503	Environmental Engineering Technology	3	
		DAK 22103	Chemical Process and Sustainability	3	
		DAK 21402	Chemical Engineering Technology Project I	2	
	II	DAK 22803	Process Control and Instrumentation	3	18
		DAK 23703	Fermentation Engineering Technology	3	
		DAK 21803	Chemical Engineering Technology Project II	3	
		DAK 22303	Chemical Reaction Engineering	3	
		DAK 20803	Wastewater Treatment Technology	3	
		DAN 20103	Business and Entrepreneurship	3	
3	I	DAK 31511	Industrial Traning (22 Weeks)	11	11
			Total Credit		**90**

Synopsis of University Courses

Year	Sem	Course Code	Courses	Credit	Total
	Special	UQU 10403	Nationhood and Current Development of Malaysia	3	7
		UQI 10402/ UQI 10202	Islamic Studies/Moral Studies	3	
		UWB10*02	Foreign Language	2	
1	I	UHB10302	English for Academic Survival	2	3
		UQ*1***1	Co-curriculum I	1	
	II	UHB20302	Academic Communication	2	5
		UQ*1***1	Co-curricular II	1	
		UQI 10502	Akidah, Ketuhanan dan Sains	2	
2	I	UHB 30502	English for Workplace	2	5
	II	DAN 20103	Business and Entrepreneurship	3	
Total Overall Credit					**20**

Synopsis of Courses

UWB 10*02 Foreign Language

Synopsis

Kursus ini disediakan untuk pelajar mempelajari asas bahasa-bahasa antarabangsa seperti bahasa Perancis, Mandarin, Arab, Jepun, Jerman Sepanyol dan Jawa. Pelajar didedahkan kepada kemahiran mendengar, membaca, bertutur dan menulis asas perbendaharaan kata, tatabahasa, bentuk ayat dan tulisan. Pelajar juga didedahkan dengan situasi harian sebenar untuk membantu mereka berkomunikasi menggunakan bahasa-bahasa antarabangsa tersebut.

References

1. Booth, Trudie Maria, 2008. French Verbs Tenses. Mc Graw-Hil, [PC 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]
6. Nurul Sabrina Zan, (2010). Hola! Hablo españolFirst Edition Batu Pahat: Penerbit UTHM, [PC4445 .N72 2010]
7. Yrama, Widya (2008). Cara belajar membaca dan menulis huruf jawa, jilid Yrama Widya. Publication info:, 2008 131738.1

UQU 10403 Nationhood and Current Development of Malaysia

Synopsis

This course will provide students a fundamental concept, the processes of formation and development of Malaysia. The topics covered include the concept of state, Malacca Kingdom, implication of imperialism and colonization, spirit of patriotism and nationalism, independence and formation of Malaysia. Besides, students will also be exposed to the constitution of Malaysia, Malaysian Government System, Economic and Social Development Policy as the main policy in the national development. At the end of the course students will able to appreciate the roles and responsibilities of a good citizen to the country.

References

1. Zahrul Akmal Damin, Fauziah Ani, Lutfan Jaes, Khairunesa Isa, Siti Sarawati Johar, Harliana Halim, Khairul Azman Mohd Suhaimy, Shamsaadal Sholeh Saad, Ku Hasnan Ku Halim dan Mohd Akbal Abdullah (2009). Kenegaraan & Pembangunan Malaysia. Batu Pahat: Penerbit UTHM.
2. Ruslan Zainudin, Mohd Mahadee Ismail & Zaini Othman. (2005). Kenegaraan Malaysia. Shah Alam: Fajar Bakti. [JQ715 .R87 2005].
3. Nazaruddin Mohd Jali, Ma'rof Redzuan, Asnarulkhadi Abu Samah & Ismail Mohd Rashid. (2005). Pengajian Malaysia. Petaling Jaya: Prentice Hall. [DS596.6 .P46 2001 N2].
4. Mohd Ashraf Ibrahim. (2004).Gagasan Bangsa Malayan yang Bersatu 1945-57. Bangi: Penerbit UKM. [DS597 .M37 2004].
5. Noor Aziah Mohd Awal. (2003). Pengenalan kepada Sistem Perundangan di Malaysia. Petaling Jaya: International Law Book Services. [KPG68 .N66 2003].

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. Harun Din (Dr.) (2001), *Manusia Dan Islam,* cetakan pertama, Kuala Lumpur: Dewan Bahasa dan Pustaka. [BP174. M36 1990]
2. Mustafa Abdul Rahman (1998), *Hadith 40*, Kuala Lumpur: Dewan Pustaka Fajar. [BP135. A2 M87 1998]
3. Ismail Haji Ali, (1995), *Pengertian dan Pegangan Iktikad yang benar: Ahli Sunnah Wal Jamaah:* Kuala Lumpur: Penerbitan al-Hidayah. [BP166.78. P46 1995]
4. Paizah Haji Ismail (1991), *Undang-undang Jenayah Islam*, Kuala Lumpur: Dewan Pustaka Islam, Angkatan Belia Islam Malaysia. [BP144. P35 1991]
5. Mustafa Haji Daud (1989), *Institusi Kekeluargaan Islam,* Kuala Lumpur: Dewan Pustaka dan Bahasa. [BP188.3. F3.M87 1989]

UQI 10202 Moral Studies

Synopsis

This course explains on concepts of moral, aspects of moral and its importance in daily lives, Western moral theories and moral values of great religions of the world, moral values in work and current moral issues.

References

1. Mohd Nasir Omar. (2010). *Falsafah Akhlak*, Penerbit Universiti Kebangsaan Malaysia, Bangi. [BJ1291 .M524 2010].
2. Hussain Othman. (2009). *Wacana Asasi Agama dan Sains.* Batu Pahat: Penerbit UTHM. [BL 240.3 H87 2009ª].
3. Hussain Othman, S.M. Dawilah Al-Edrus, Berhannudin M. Salleh & Abdullah Sulaiman. (2009). *PBL Untuk Pembangunan Komuniti Lestari*.Batu Pahat: Penerbit UTHM. [LB 1027.42 P76 2009a].
4. Eow Boon Hin. (2002). *Moral Education*. Longman. [LC268 .E48 2008].
5. Ahmad Khamis. (1999). *Etika Untuk Institusi Pengajian Tinggi*. Kuala Lumpur: Kumpulan Budiman. [LC315.M3 .A35 1999].

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 persor-ral and academic activities in the context of tertiary education.

References

1. Clark, Ruth Colvin. (2004). Graphics Learning: Provet in Training Materials. San Fransisco, CA: Pfei Lt]1043.5 .C52 2004.
2. Dunne, Elisabeth. (1994). 7'alking and Learning in Grc Fry, Ronald W. (1994). 7'ake Notes (2nd ed.). Hawthor Galanes, Gloria l. (2013).
3. Ef/bctive Group Discussion: McGraw-Hill. t-IM736 .G34 2013 Greasley, Pete. (2011). Doing essays and assignments Sage Publication. l-B 1047'3 .G73 20ll
4. Lim, Phyllis L. (2014). Listening & Notetaking Skills2 PEI 128 .L55 20l'l
5. Van Blerkom, Dianna L. (2012). College Study Skills (Learning. L82395 .V36 2012.
6. Wong, Linda. (2012). Essential Study Skills (7th ed.). ILI3 l 049 . W66 201)Study Strategies. Belmont, CA: Wadsworth.

UHB 20302 Academic Communication

Kursus Prerequisite: 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. Richard Johnson-Sheehan (2005). Technical Communication Today. New York:Pearson. TK5105.S26
2. Fairbairn, Gavin J. (20 ll). Reading, Writing and Reasoning; A Guidefor Studerzrs. Maidenhead: Open University Press, 2011. L82395 .F34 20ll'
3. Jordan, R. R. (2003). Academic writing Course; study skills in English (3rd ed.). Essex: Longman. PEl408 .J67 2003.
4. Langan, John. (201I). Cottege WritingSkilts (Sth ed.). New York: McGraw-Hill. PE1471 .L36 2011.
5. Lewis, Jrll. Readingfor Academic Success : Reading and Strategies. Boston: Houghton Mifflin' LF.2395.3 .L48 2002.
6. Cheesebro.T, O'Connor, L. & Rios, F. (2007). Communication skills: preparing for career success (3rd ed.) Upper Saddle River, NJ: Pearson. HF5718.C53

UQ* 1*1 Co-Curricular I**

Synopsis

Kursus ini ditawarkan dalam pelbagai bentuk aktiviti pilihan untuk pelajar peringkat Sarjana Muda dan Diploma. Lapan bidang aktiviti yang ditawarkan adalah Pengucapan Awam, Keusahawanan, Sukan, Khidmat Komuniti, Kesukarelawanan, Kepimpinan, Kebudayaan dan Daya Usaha dan Inovasi.

DAS 11003 Technical Mathematic I

Prerequisite Course(s): None

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 el. 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

Prerequisite Course(s): None

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. Giambatistta 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 12302Foundation of Chemical Engineering Technology

Prerequisite Course(s): None

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

Prerequisite Course(s): None

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

Prerequisite Course(s): None

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

Prerequisite Course(s): None

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.

UQ* 1*1 Co-curricular II**

Synopsis

Kursus ini ditawarkan dalam pelbagai bentuk aktiviti pilihan untuk pelajar peringkat Sarjana Muda dan Diploma. Lapan bidang aktiviti yang ditawarkan adalah Pengucapan Awam, Keusahawanan, Sukan, Khidmat Komuniti, Kesukarelawanan, Kepimpinan, Kebudayaan dan Daya Usaha dan Inovasi.

UQI 10502 Theology and Science

Synopsis

Kursus ini tertumpu kepada dua perkara asas iaitu konsep pegangan akidah keagamaan dan kepelbagaian pandangan mengenai sains. Natijah daripada ini akan dapat dilihat kewujudan hubungan antara keduanya melalui perbincangan berasaskan konsep ilmu yang holistik.

References

1. Ghazali Darussalam, 2001, Tamadun Islam dan Tamadun Asia, Kuala Lumpur: Utusan Publication., [DS36.86 .G52 2001 N1]
2. Harun Din, 2003, Manusia dan Islam, Kuala Lumpur: Dewan bahasa dan Pustaka, [BP166.7 .H37 2003]
3. Hussain Othman, Akidah ketuhanan dan Sains, 2007, Batu Pahat : Penerbit Universiti Tun Hussein Onn Malaysia, [BP166.2 .H87 2007]
4. Maurice Bucaille, 2006, The Bible, The Quran and Sceince : The holy Scriptures examined in the light of modern knowledge, Gombak: A.S Noordeen, [BP190.5.S3 .B834 2006]
5. Mir Aneesuddin, 2000, terj: Fatwa al-Quran Tentang Alam Semesta, cet.1, Jakarta:Serambi [BP134.N3 .A53 2000]

6. Mohammed Ali Albar, 1993, terj: Rusli Haji Nordin, cet. 2, Perkembangan Manusia Menurut al-Quran, Kuala Lumpur: Crescent News KL, Sdn. Bhd, [BP190.5 .A53 1992]
7. Sulaiman Nordin (et. al.), 1995, Sains Menurut Perspektif Islam, Kuala Lumpur: Dewan Bahasa dan Pustaka, [BP134.S3 .S34 1995]
8. Syed Muhammad Naquib Al-Attas, 1981, Islam dan Sekularisme, Bandung: Pustaka, [BP161.2 .A42 1981]

DAS 11103 Technical Mathematic II

Prerequisite Course(s): None

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 el. 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

Prerequisite Course(s): None

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.
6. Wayne Ernest Wentworth. Physical Chemistry: a short course. Blackwell Science, 2000

DAK 10502Engineering Drawing

Prerequisite Course(s): None

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

Prerequisite Course(s): None

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

Prerequisite Course(s): None

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 20603 Thermodynamics

Prerequisite Course(s): None

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

Prerequisite Course(s): None

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]
3. Latha, C. D. Swarna., Microbial biotechnology, New Delhi: Discovery Publishing, 2007, [TP248.27. M53.L37 2007]
4. Roy, Darbeshwar., Biotechnology, Oxford, UK: Alpha Science, 2010, [TP248.2. R69 2010]
5. Borem, Aluizio., Understanding biotechnology, Upper Saddle, NJ : Prentice Hall, 2003, [TP248.215. B67 2003]

DAS 21002 Technical Matematics III

Prerequisite Course(s): None

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 (DAS11103)*. 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.

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 knowledge and 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, Jeffrey G. (2004). The Complete Q and A job interview book (ath ed.). Hoboken, NJ:John Wiley. HF5549.5.16 .A44 2004.
2. Badger, Ian. (2003). Everyday Business Writing. Essex: Pearson. PEI I 15 .8327 2003.
3. Corfield, Rebecca. (2003). Preparing the Perfect Job Application: Application Forms qnd Letters Made Easy.New Dethi: Kogan Page. HF5383 .C67 2008.
4. Freitag-Lawrence, Anne. (2003). Business presentations. England: Pearson. P81479.887 .F73 2003.
5. Mohammad Talha Mohamed Idris & Zulida Kadir (2009). Technical Communication II: Teaching Modul UMB 1122. Batu Pahat: UTHM.
6. Zulida Abdul Kadir (2006). Technical Communication II: Teaching Modul UMB 1122. Batu Pahat: UTHM. T11.Z84 2006

DAK 23503Environmental Engineering Technology

Prerequisite Course(s): None

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 22103 Chemical Process and Sustainability

Prerequisite Course(s): None

Synopsis

To provide students with alternative chemical processes and manufacturing technologies in creating products. This course emphasize on simplification of chemical processes, process development, manufacturing practices and processes. It is hope to provide a structured approach to producing quality products with less waste, making the process not only efficient but environmentally friendly.

References

1. Gabriele Centi, Siglinda Perathoner, Ferruccio Trifiro. Sustainability Industrial Processes. Wiley- VCH , 2009.
2. Malhotra, Girish.2011, Chemical Process Simplification: Improving Productivity and Sustainability. Hoboken : John Wiley. Call number : TP155.7 .M34 2011
3. Cinar A., Palazoglu A.2007, Chemical Process Performance Evaluation. Boca Raton : CRC, 2007. Call number : TP155.75 .C56 2007
4. Scholz, Roland W.,Binder, Claudia R.2011. Environmental Literacy in Science and Society : from Knowledge to Decision. Cambridge New York : Cambridge University Press. Call number: XX(131560.1) request item
5. Brebbia, C. A.Reniers, G.2011. Sustainable Chemistry. Boston : WIT, 2011.Call number: TP155.2.E58 .S97 2011
6. Igbinoghene, D. C. Chemical Process Calculations Manual. New York: McGraw-Hill, 2004. Call Number: TP155.7 .I42 2004

DAK 20803Wastewater Treatment Technology

Prerequisite Course(s): None

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

Prerequisite Course(s): None

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

Prerequisite Course(s): None

Synopsis

Kursus ini direkabentuk untuk memberi hubungkait antara prinsip-prinsip, konsep-konsep, keseimbangan mol, stoikiometri, isoterma dan nonisothermal kepada aplikasi dalam reka bentuk reaktor. Kursus ini juga meliputi keselamatan reaktor dan penyelesaian masalah, yang merupakan asas dalam teknologi reaktor. Konsep asas keseimbangan fasa dan keseimbangan tindakbalas kimia juga diajar untuk meningkatkan pemahaman pelajar tentang hubungan antara pembolehubah yang berkait dengan sistem. Topik yang dibincangkan termasuk pengenalan kepada reka bentuk reaktor, skala reaktor, pemodelan, keselamatan reaktor dan penyelesaian masalah.

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

Prerequisite Course(s): None

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 Saddler 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

DAN 20103 Business and Entrepreneurship

Prerequisite Course(s): None

Synopsis

This course provides basic knowledge and understanding of entrepreneurship as well as business management. This course gives students exposure to understand the concept of business and entrepreneurship such as business law and business plan as well as budgeting and marketing products efficiently. It covers topics such as introduction to business entrepreneurship, regulatory and business support facilities, marketing plans, operational plans, financial plans and administrative plans.

References

1. Norliza Ghazali & Raudah Mohd Adnan: Perniagaan dan Keusahawanan, Penerbit UTHM, 2016
2. Oxford Fajar (2013). Third Edition. Entrepreneurship. Sarimah Hanim Aman Shah & Cecilia Soon Teik Lan
3. Mariotti, Steve.(2012). Entrepreneurship & Small Business Management, Boston:Prentice Hall.(HD62.7.M38 2012).
4. Rosli Mahmood etl. (2010), Prinsip-prinsip Keusahawanan:Pendekatan Gunaan. 2nd ed. Cernage Learning Asia Pte Ltd. (HB615.P74 2010)
5. Universiti Teknologi MARA. Entrepreneurship Study Group (2004). Fundamentals of Entrepreneurship. Rev. Ed. Prentice Hall. (HB615.F86 2004)

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

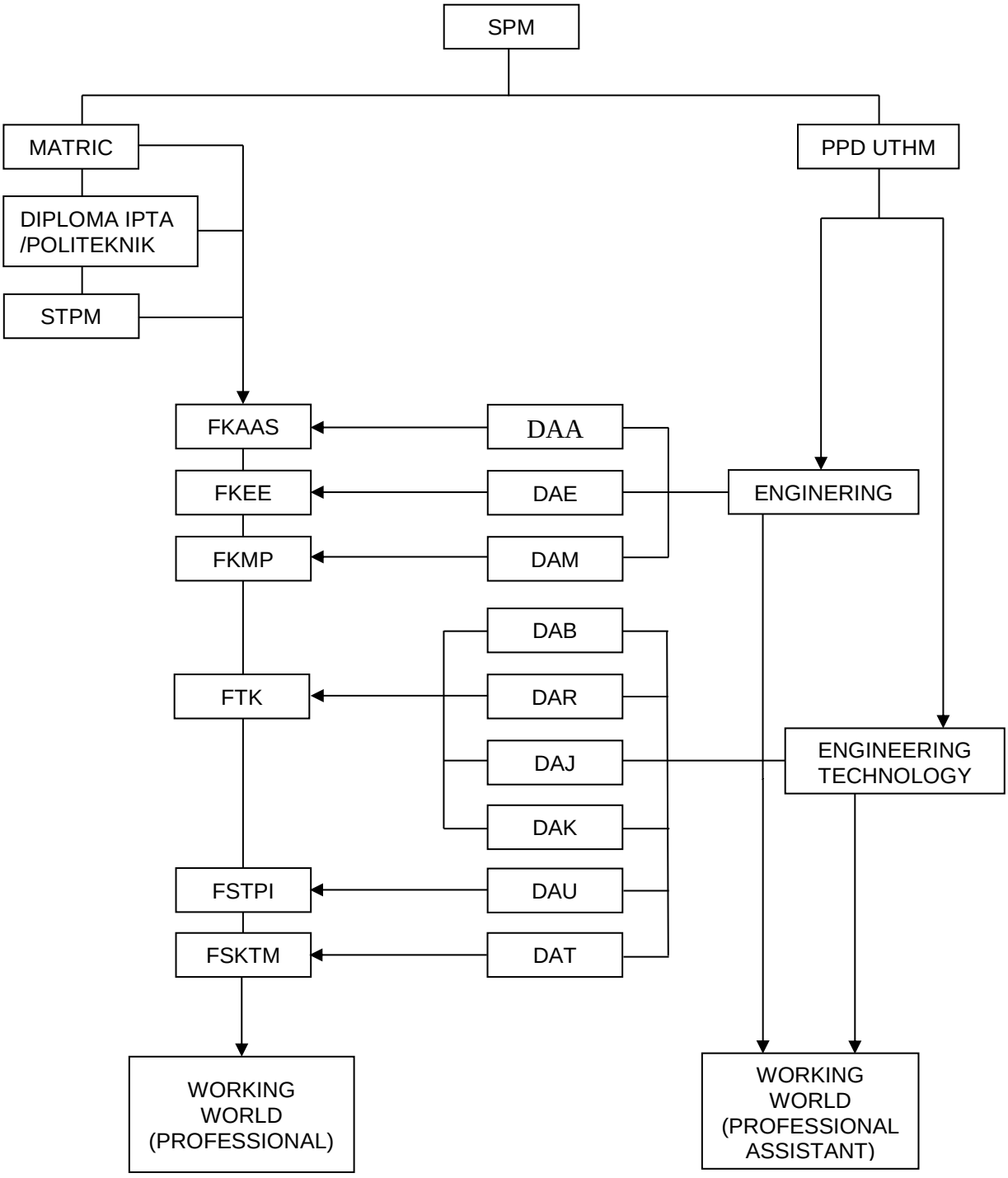
1. Industrial Training Guidebook, UTHM

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.



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 Apllied Sciences

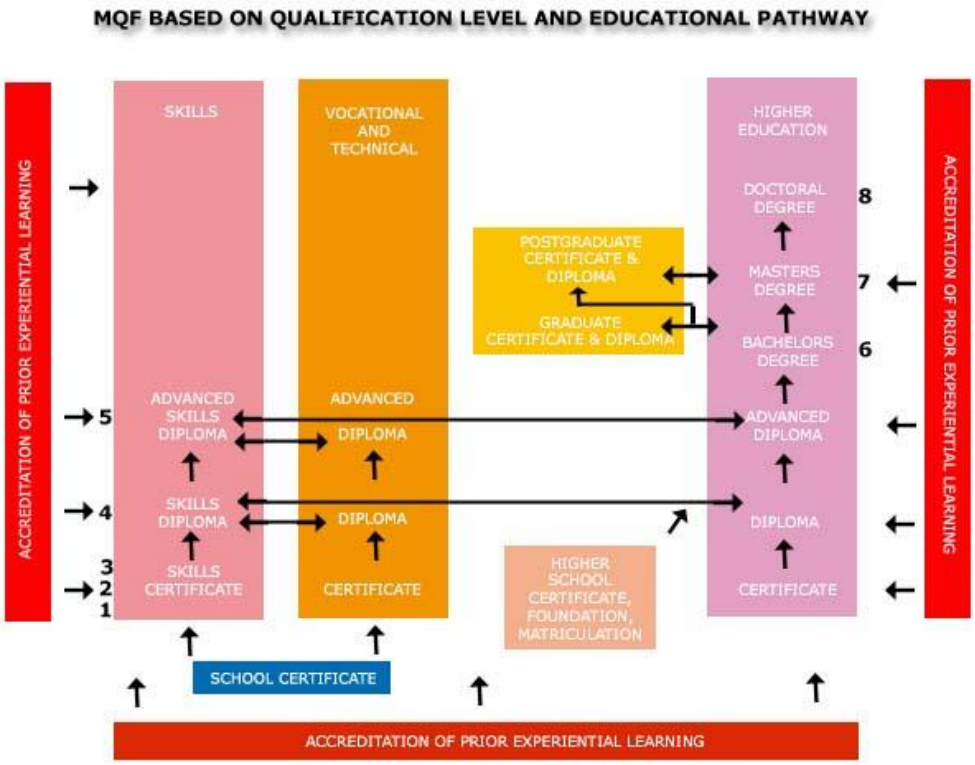


Figure 1: Malaysian Qualification Framework

MALAYSIAN QUALIFICATIONS FRAMEWORK: QUALIFICATIONS AND LEVELS

<table>
<tr><th rowspan="2">MQF Levels</th><th colspan="3">Sectors</th><th rowspan="2">Lifelong Learning</th></tr>
<tr><th>Skills</th><th>Vocational and Technical</th><th>Higher Education</th></tr>
<tr><td>8</td><td colspan="2" rowspan="4"></td><td>Doctoral Degree</td><td rowspan="9">Accreditation of Prior Experiential Learning (APEL)</td></tr>
<tr><td rowspan="2">7</td><td>Masters Degree</td></tr>
<tr><td>Postgraduate Certificate & Diploma</td></tr>
<tr><td rowspan="2">6</td><td>Bachelors Degree</td></tr>
<tr><td>Graduate Certificate & Diploma</td></tr>
<tr><td>5</td><td>Advanced Diploma</td><td>Advanced Diploma</td><td>Advanced Diploma</td></tr>
<tr><td>4</td><td>Diploma</td><td>Diploma</td><td>Diploma</td></tr>
<tr><td>3</td><td>Skills Certificate 3</td><td rowspan="3">Vocational and Technical Certificate</td><td>Certificate</td></tr>
<tr><td>2</td><td>Skills Certificate 2</td><td rowspan="2"></td></tr>
<tr><td>1</td><td>Skills Certificate 1</td></tr>
</table>

Figure 2: Malaysian Qualification Framework

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