

ACADEMIC PROFORMA 2018 / 2019 ppd.uthm.edu.my

DIPLOMA OF APPLIED SCIENCES



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.

All rights reserved. No part of this proforma may be reproduced in any form or by any means, electronic, photocopying, recording, visual, or otherwise, without prior written permission of the Vice Chancellor of Universiti Tun Hussein Onn Malaysia.

©Centre for Academic Development and Training Universiti Tun Hussein Onn Malaysia August 2018

Contents

Foreword from the Vice Chancellor	4
Foreword from the Deputy Vice Chancellor (Academic and International)	5
Foreword from the Dean of the Centres for Diploma Studies	6
University Vision	7
University Mission	7
University Education Philosophy	7
University Logo	7
Chancellor	8
Pro Chancellor	8
University Board of Directors	9
University Senate Members	10
Centres for Diploma Studies	12
Faculty Vision	12
Faculty Mission	12
Faculty Visiting Professors	14
Faculty Industrial Advisors	14
Faculty Staff Directory	15
Programme Aims	19
Programme Educational Objectives (PEO)	19
ProgrammeLearningOutcomes (PLO)	20
Curriculum Structure	21
Synopsis of the University Courses	23
Synopsis of the Faculty Courses	25
Career & Further Education Prospect	44

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

Dr. Rosli bin Omar

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 Ts. 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

Associate Professor Dr. Wan Muhammad Saridan bin Wan Hassan Ph.D (Medical Physics) (University of Aberdeen, UK), M. Sc. (Physics) (University of California, USA), B.Sc. Ed. (Hons) (Physics) (UTM)

Industrial Advisor

En. Miskandar bin Mat Sahri Head of Unit Protein and Food Technology Malaysian Palm Oil Berhad

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/I 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 Applied Sciences (DAU)

Programme Aims

Diploma in Applied Sciences is to produce semi – professionals human resourcebased on the following PEO.

Programme Educational Objectives (PEO)

These are the PEOs for Diploma in Applied Science:

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

PEO1	:	Apply the theoretical and practical knowledge to solve the problems related to science in an applied context.
PEO2	:	Practice the applied science related problem professionally and ethically by applying analytical and critical thinking skills.
PEO3	:	Demontrates a professional ethic to meet the needs of communities and organizations.
PEO4	:	Practice the concept of life long learning and entrepreneurship.

Programme Learning Outcomes (PLO)

These are the PLOs for Diploma in Applied Science:

- PLO1 Apply basic knowledge of mathematics and science to the solutions of applied science problems.
- PLO2 Apply appropriate practical skills using comprehensive modern tools to solve problems in applied science.
- PLO3 Communicate professionally on applied science activities with community, such as being able to comprehend and write effective reports, make effective presentations and receive clear instructions.
- PLO4 Demonstrate analytical and critical thinking skills to solve applied science problems by using appropriate scientific methods.
- PLO5 Adopt effective teamwork responsibility
- PLO6 Participate in lifelong learning and manage information competently to enhance knowledge and personal skill in field of Applied Science.
- PLO7 Practise basic entrepreneurship and management skill for future career development.
- PLO8 Behave according to the roles and ethics of professionallism in terms of their skills related to applied science
- PLO9 Adopt effective leadership and teamwork responsibility
- PLO10 Commit effectively in society and technologist communities

Table 1. Diploma in Applied Science (DAU)

Year	Semester	Course Code	Courses	Credit	Total
		UQU 10403	Introduction to Nationhood and Development of Malaysia	3	
	Special	UQI 10402/UQI 10202	Introduction to Islamic Studies / Moral Studies		7
		UWB 10*02	Foreign Language	2	
		UHB 10302	English for Academic Survival	2	
		UQ* 1***1	Co-curriculum I	1	
		DAS 10103	Algebra	3	
	I	DAS 12303	Physical Chemistry	3	17
		DAS 14103	Physics I	3	
		DAU 18102	Occupational Safety and Health	2	
		DAU 16103	Computer Technology and Multimedia	3	
1		UHB 20302	Academic Communication	2	
		UQI 10502	Divine Faith and Science	2	
		UQ* 1***1	Co-curiculum II	1	
	II	DAS 12503	Organic Chemistry	3	17
		DAS 10503	Statistics I	3	
		DAS 14203	Physics II	3	
		DAS 16403	Cell Biology	3	
	III				
		UHB 30502	English for Workplace	2	
		DAS 22403	Analytical Chemistry	3	
	I	DAS 20703	Statistics II	3	47
		DAS 24603	Physics III	3	17
		DAS 26503	Microbiology	3	
		DAU 22303	Enviromental Chemistry	3	
		DAS 20803	Calculus	3	
2		DAN 20103	Perniagaan dan Keusahawanan	3	
۷		DAU 22202	Renewable Resources	2	
	II	DAU 21303/DAU	Fundamentals of Food Science and Technology/Fundamentals	-	
		24103*	of Health Physics*	3	17
		DAU 23302/DAU 24202*	Analytical Instrumentation/Introduction to Modern Physics*	2	
		DAU 22102	Waste Management	2	
		DAU 25102	Final Year Project I	2	
		DAU 25304	Industrial training	4	4
		DAU 33202/DAU 34303*	Herbs/Thermodynamics*	3	
3	I	DAU 31203/DAU 34403*	Food Quality Assurance and Safety /Ordinary Differential Equation*	3	12
		DAU 30203	Crime Scientific Investigation	3	
		DAU 35203	Final Year Project II	3	
	I		Tot	al Credit	91

Synopsis of University Courses

Year	Sem	Course Code	Courses Credit		Total	
	Special	UQU 10403	Introduction to Nationhood and Development of Malaysia	3		
		UQI 10402/UQI 10202	Introduction to Islamic Studies / Moral Studies	2	7	
1		UWB 10*02	Foreign Language	2		
	I	UHB 10302	English for Academic Survival	2	3	
		UQ*1***1	Co-curriculum I	1		
	II	UHB 20302	Academic Communication	2		
		UQI 10502	Divine Faith and Science	2	5	
		UQ* 1***1	Co-curiculum II	1		
	I	UHB 30502	English for Workplace	2		
2	II	II DAN 20103 Perniagaan dan Keusahawanan		3	2	
Total Overall Credit 2				20		

Synopsis of Courses

UWS10403 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

- Ahmad Esa, Harliana Halim, Khairul Azman Mohd Suhaimy, Ku Hasnan Ku Halim, Marwan Ismail, Mohd Akbal Abdullah, Shamsaadal Sholeh Saad dan Zahrul Akmal Damin (2004). *Ikhtisar Sejarah Kenegaraan & Pembangunan Malaysia*. Johor Bahru , Muapakat Jaya Percetakan Sdn. Bhd. [DS596.133 2003]
- Fauziah Ani, Harliana Halim, Khairul Azman Mohd. Suhaimy, Khairunesa Isa, Ku Hasnan Ku Halim, Lutfan Jaes, Mohd. Akbal Abdullah, Shamsaadal Sholeh Saad, Siti Sarawati Johar, Zahrul Akmal Damin (2009). *Kenegaraan & Pembangunan Malaysia*. Batu Pahat ,Penerbit UTHM. (Modul Kenegaraan dan Pembangunan Mutakhir Malaysia)
- Nazaruddin Mohd Jali, Ma'rof Redzuan, Asnarulkhadi Abu Samah dan Ismail Mohd Rashid (2005). *Pengajian Malaysia*. Petaling Jaya, Prentice Hall.[DS596.6 .P46 2001 N2]
- Lembaga Penyelidikan Undang-undang (2003). Perlembagaan Persekutuan: (hingga 15hb.Ogos 2003). Petaling Jaya : International Law Book Services. [KPG1744.51963.A3 .A4 2003 rw]
- 5. Ruslan Zainudin, Mohd Mahadee Ismail dan Zaini Othman (2005). Kenegaraan Malaysia.Shah Alam, Fajar Bakti. [JQ715.R87 2005]
- 6. Ting Chew Peh (1980). *Konsep Asas Sosiologi*. Kuala Lumpur ,Dewam Bahasa dan Pustaka. [HM51 .T56 1985]

UWA10402 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.

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

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 2009^a].
- 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].

UWB1**02 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
- 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 1. Yrama Widya. Publication info:, 2008 131738.1

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 I. (2013).
- 3. Ef/bctive Group Discussion: McGraw-Hill. t-IM736 .G34 2013 Greasley, Pete. (2011). Doing essays and assignments Sage Publication. I-B 1047'3 .G73 20II
- 4. Lim, Phyllis L. (2014). Listening & Notetaking Skills2 PEI 128 .L55 20I'l
- 5. Van Blerkom, Dianna L. (2012). College Study Skills (Learning. L82395 .V36 2012.
- 6. Wong, Linda. (2012). Essential Study Skills (7th ed.). ILI3 I 049 . W66 201)Study Strategies. Belmont, CA: Wadsworth.

UQ* 1***1 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* 1***1 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.

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.

- 1. Richard Johnson-Sheehan (2005). Technical Communication Today. New York:Pearson. TK5105.S26
- 2. Fairbairn, Gavin J. (20 II). Reading, Writing and Reasoning; A Guidefor Studerzrs. Maidenhead: Open University Press, 2011. L82395 .F34 20II'
- 3. Jordan, R. R. (2003). Academic writing Course; study skills in English (3rd ed.). Essex: Longman. PEI408 .J67 2003.
- 4. Langan, John. (2011). 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

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.
- Zulida Abdul Kadir (2006). Technical Communication II: Teaching Modul UMB 1122. Batu Pahat: UTHM. T11.Z84 2006

UWA 10502 Theology and Science

Synopsis

This course focuses on the concept of two basic things which are holding religious beliefs and looking at different views in science. As a result of this, the existence of the relationships between them can be distinguished through discussions based on the holistic concept of knowledge.

- 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
- 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 N1
- 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 10103 Algebra

Prerequisite Courses: None

Synopsis

This course covers topics in mathematics that uses the properties of the real numbers as an exponent, logarithms, and radicals. Students also solve polynomial problems such as quadratic equations, inequalities, and absolute value. Partial fractions also introduced and numerical methods such as the Bisection method and Secant for nonlinear equations. Next, the course also explains the sequence and series of arithmetic and geometric series. The algebraic method used is the binomial expansion. The topic cover in trigonometry is the ratio of any angle trigonometry and trigonometric equations. Next, students use arithmetic operations and elementary row operations in matrix topic. To solve systems of linear equations in a matrix, the methods use are matrix inverse, Gauss-Jordan elimination, numerical solution method and Gauss-Seidel methods. At the end of this course, students learn the lines and equation of the plane in a vector. Lastly, a variety of methods used to solve complex number in arithmetic operations such as polar form, Euler formulas, and theorems of De Moivre.

References:

- 1. Nafisah@Kamariah Md. Kamaruddin el. al. (2015). DAS 10103 Algebra. Centre for Science Studies, UTHM Publisher.
- 2. Abd. Wahid Md Raji et al. (2000). Matematik Asas, Jilid I&II. Jabatan Matematik, Fakulti Sains, UTM.
- 3. James, S. (2001). Intermediate Algebra. Boston: McGraw Hill. QA39.3 .S73 2002
- 4. Howard Anton. (1994) Elementary Linear Algebra. New York. Wiley. QA184 .A57 1994
- 5. Glyn James. (2001). Modern Engineering Mathematics. England. Prentice Hall. TA330 .J352 2001

DAS 12303 Physical Chemistry

Prerequisite Courses: None

Synopsis

The course covers the fundamental of states of matter, atomic mass and structures, the gas properties, thermodynamics, Hess's Law, Henry's Law and Raoult's Law, the chemical equilibrium, Le Chatelier Principle, electrochemistry, the Arrhenius and Bronsted definition of acids and bases, chemical kinetics, and chemical bonding and intermolecular forces in compounds.

- 1. Tuteja, A. 2007. *Fundamentals of Physical Chemistry*. Discovery Publishing House, New Delhi. [QD453.2 .T87. 2007]
- 2. Levine, I.N. 2009. *Physical Chemistry, 6th. Ed.* McGraw Hill, Boston. [QD453.3.L48. 2009]
- 3. Norbani Abdullah, *et al.* 1998. *Kimia Fizikal Asas Matrikulasi*. Penerbit Fajar Bakti, Shah Alam, Malaysia. [QD453.2.N67. 1998]
- 4. Jones, A. 2005. *Chemistry An Introduction for medical and Health Sciences*. John Wiley & Sons Ltd: England. [QP514.2 .J66. 2005]
- 5. Kuhn, H. et al. 2009. Principles of Physical Chemistry, John Wiley; , Hoboken, NJ. [QD453.3 .K83. 2009]

DAS 14103 Physic I

Prerequisite Courses: None

Synopsis

This course introduces students to mechanic physics knowledge needed related to linear motion and angular motion. The application involves the concept of SI units, vector, position, distance, displacement, speed, velocity, mass, weight, momentum and acceleration into force, work, energy, power and SHM. The courses also discuss Newton's Law and dynamics motion of body on horizontal and incline planed. The laboratory experiments are carried out on selected topics.

References:

- Giordano, Nicholas J. (2013) College physics : reasoning and relationships 2nd Ed: Brooks/Cole QC21.3 .G564 2013
- 2. Serway, Raymond A **(2014)** Physics for scientist and engineers : a strategic approach with Modern Physics *3rd Ed.*, Pearson QC23.2.S474 2014
- 3. Masrianis Ahmad et. al. (2014) DAS 14103 Physics I. Centre for Science Studies, UTHM Publisher, UTHM Publisher
- 4. Knight, Randall D. **(2013)** Physics for scientist and engineers : a strategic approach with Modern Physics *3rd Ed.*, Pearson QC23.2.K54 2013
- 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

DAU 16103 Computer Technology And Multimedia

Prerequisite Courses: None

Synopsis

This course provides the relevant information covering the history of computer technology, hardware, software and computer networks. In addition, students will also be exposed particularly to the development of multimedia technology and the design of multimedia presentation.

- 1. Stallings, William (2011). Data and Computer Communications, 9th edition. London: Pearson Education. Shelf No: XX(132126.1)
- Stallings, William (2011). Computer Organization and Architecture: Designing for Performance, 8th edition. Upper Saddle River: Prentice Hall. Shelf No: QA76.9.C643.S72 2010
- 3. Huang, George Q. Mak, K. L.(2003). Internet Applications in Product Design and Manufacturing. Berlin: Springer. Shelf No: TS155.6 .H82 2003
- Rahman, Syed Mahbubur (2008). Multimedia Technologies: Concepts, Methodologies, Tools and Applications. London: Information Science Reference. Shelf No: QA76.575 .R33 2008 v.3
- 5. Felke-Morris, Terry (2011). Web development and design foundations with XHTML, 5th ed. Boston : Addison-Wesley. Shelf No: QA76.76.H94 .F44 2011

DAS 22503 Organic Chemistry

Prerequisite Courses: None

Synopsis

This course deals primarily with the basic principles to understand the structure and reactivity of organic molecules. Emphasis is on substitution and elimination reactions and chemistry of the carbonyl group. The course covers the introduction to organic molecules, stereochemistry, organic reactions, alkanes, alkenes, alkynes and radical reactions.

References:

- Brown, W. H. and Poon, T. (2011). Introduction to Organuc Chemistry 4th Ed. New York: John Wiley. QD253.2 .B76 2011
 - QD253.2 .S64 2011
- 2. Carey, F. A. and Giuliano, R.M. 2001. *Organic Chemistry 7th. Ed.* McGraw Hill.
- QD251.3 .C37 2011
- 3. Smith, J.G. (2008). *Organic Chemistry for Matriculation*. New York: McGraw Hill. QD253.2 .S65 2008
- 4. Smith, J.G. 2008. Organic Chemistry 3rd. Ed. New York: McGraw Hill, QD253.2 .S64 2008
- 5. Solomons, T. W. G. and Fryhle, C. B. (2011). *Organic Chemistry 10th , Ed.* Hoboken, NJ: John Wiley. QD253.2 .S64 2011

DAS 10503 STATISTIC I

Prerequisite Courses: None

Synopsis

This course cover topic introduction of statistics, which are students will know some basic terms in statistics and the role of statistics. Students also learn type of variable, sources of data and scale of measurement. It also introduces how to organizing and graphing data such as frequency table, pie chart, histogram and bar chart. Then, it emphasizes on descriptive statistics, which includes measures of central tendency, measures of variability and measures of position. Students will introduce with the research fundamental include research design, research question and how to sampling the data. After that, they will learn how to model the data and find the relationship between variables.

- 1. Wadpole Mayer. Probability And Statistics For Engineers And Scientists. Prentice Hall. 1993.
- 2. Douglas C. Montgomery & George C. Runger (2002). Applied Statistics and Probability for Engineers. John Wiley.
- 3. Allan G.Bluman(2007) Elementary Statistics, A step by Step Approach. MacGraw Hill Int EditionPrentice Hall. TA330 .J352 2001

DAU 20703, Statistics II

Prerequisite Courses: Statistics I

Synopsis

This course covers topics in probability where students are introduced to the probability of an events, conditional and independent events. Students also solve random variable problem such as expected value, variance and standard deviation on discrete and continuous random variable. Then, students enhanced their prior knowledge of random variable to solve Binomial, Poisson and normal distribution. They then studied the central limit theorem and used them to find the normal approximation to Binomial and Poisson distribution. Next, this course also explain on the sampling distribution of single and two means. After that, students are exposed to the concept of estimation and confidence interval for single and difference of two means and also hypothesis testing.

References:

- 1. Nafisah@Kamariah Md. Kamaruddin el. al. (2010). Statistics (DAS20202). Pusat Pengajian Diploma, UTHM Publisher.
- 2. Wadpole Mayer. Probability and Statistics for Engineers and Scientists. Prentice Hall. 2007. TA340 .W35 2007.
- 3. Douglas C. Montgomery & George C. Runger (2011). Applied Statistics and Probability for Engineers. John Wiley. QA276.12 .M664 2011
- 4. Allan G.Bluman (2007) Elementary Statistics, A step by Step Approach. MacGraw Hill International Edition. QA276.12 .B58 2007.
- 5. Douglas C. Montgomery, George C. Runger & Norma Faris Hubele. (2004) Engineering Statistics. John Wiley. QA276.12 .M66 2004

DAS 20803 Calculus

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.

- 1. Nafisah@Kamariah Md. Kamaruddin el. al. (2016). Calculus (DAS20803). Pusat Pengajian Diploma, UTHM Publisher
- 2. Abd Wahid Md Raji (et al.). (2013). Calculus, UTM & PP Sains. [QA303 .F57 2013]
- 3. Anton, Bivens, I., Davis, S. Calculus. (7th ed). (2002). John Wiley & Sons,Inc, USA. [QA303 .A57 2002 n.1]
- 4. James, Glyn. Modern Engineering Mathematics third edition. (2001). Prentice Hall, Essex.[TA330.J352]

DAS 14103 Physic I

Prerequisite Courses: None

Synopsis

This course introduces students to mechanic physics knowledge needed related to linear motion and angular motion. The application involves the concept of SI units, vector, position, distance, displacement, speed, velocity, mass, weight, momentum and acceleration into force, work, energy, power and SHM. The courses also discuss Newton's Law and dynamics motion of body on horizontal and incline planed. The laboratory experiments are carried out on selected topics.

References:

- 6. Giordano, Nicholas J. **(2013)** College physics : reasoning and relationships 2nd *Ed*: Brooks/Cole QC21.3 .G564 2013
- 7. Serway, Raymond A **(2014)** Physics for scientist and engineers : a strategic approach with Modern Physics *3rd Ed.*, Pearson QC23.2.S474 2014
- 8. Masrianis Ahmad et. al. (2014) DAS 14103 Physics I. Centre for Science Studies, UTHM Publisher, UTHM Publisher
- 9. Knight, Randall D. **(2013)** Physics for scientist and engineers : a strategic approach with Modern Physics *3rd Ed.*, Pearson QC23.2.K54 2013
- 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

DAS 14203 Physics II

Prerequisite Courses: None

Synopsis

This course introduces students to mechanic physics knowledge needed related to properties of material, fluids, waves and sounds, thermal physics, light and optics. 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, application of wave such as interference, diffraction and polarization. The course also discusses light and optics such as geometrical optics. The laboratory experiments are carried out on selected topics.

- Giordano, Nicholas J. (2013) College physics : reasoning and relationships 2nd Ed: Brooks/Cole QC21.3 .G564 2013Serway, R. A., Faughn, J. S., Moses, C. J. (2006). College Physics. 6th Ed. USA: Pacific Grove, CA: Thomson Learning. QC21.3 .S47 2006 v.2
- Serway, Raymond A (2014) Physics for scientist and engineers : a strategic approach with Modern Physics 3rd Ed., Pearson QC23.2.S474 2014Urone, P. P. (2001). College Physics. 2nd Ed. USA: Pacific Grove, CA: Brooks/Cole. QC23.U76 2001.
- 3. Masrianis Ahmad et. al. (2014) DAS 14103 Physics I. Centre for Science Studies, UTHM Publisher, UTHM Publisher
- **4.** Knight, Randall D. **(2013)** Physics for scientist and engineers : a strategic approach with Modern Physics *3rd Ed.*, Pearson QC23.2.K54 2013
- 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

DAS 24603 Physics III

Prerequisite Courses: None

Synopsis

This course is mainly focusing on electrical physics and electronics. At the beginning of this course, student will be introduced to electronic components. Basic theorem used to determine the current in complex circuit will be discuss in the next chapter. Subsequently, more complex circuit including analog devices, rectifiers circuit, diode circuit and JFET are includes in this course.

References:

- 1. Poh, L.Y. and Nagappan, S. (2009) Physics for Matriculation, Semester 2, 2nd Ed,
 - Penerbit Oxford Fajar.
- 2. Giambattista, A., Richardson, B. M., Richardson, R. C. (2007). College Physics 2nd Ed. New York: Mc Graw Hill.
- 3. Serway, R. A., Faughn, J. S., Moses, C. J. (2003). College Physics. 6th Ed. USA: Pacific Grove, CA: Thomson Learning.
- 4. Bueche, F. J., Hecht, E., Hademenos, G. J. (2000). College Physics: based on Schaum's Outline of college physics. New York: McGraw-Hill.
- 5. Urone, P. P. (2001). College Physics. 2nd Ed. USA: Pacific Grove, CA: Brooks/Cole.

DAS 26203 Cells Biology

Prerequisite Courses: None

Synopsis

This course aim to provide student's knowledge on evolutions, diversity of living things. This course begins with the fundamentals of Evolution & Taxonomy. The mechanisms behind the development of species, ecosystems and biodiversity will be explored. Each Kingdom of Life will be discussed.

- 1. Campbell, N.A and Reece, J.B (2009). Biology 8th. Ed. San Francisco, Pearson Benjamin Cummings. QH308.2 .C35 2009
- 2. Belk, C and Maier, V.B (2010). Biology : Science for Life. 3rd. ed. New Jersey, Pearson. QH307.2 .B44 2010
- 3. Mader, S.S (2012). Essentials of Biology. Boston. McGraw-Hill. QH308.2 .M325 2012
- 4. Ross, F.C, Bailey, D and Enger, E.D (2009). Concepts in Biology. 13th. Ed. Berkshire, McGraw-Hill. QH308.2 .E53 2009
- 5. Krebs, Charles J (2008) The ecological world view. Wallingford, CABI QH541 .K734 2008

DAS 26503, Microbiology

Prerequisite Courses: None

Synopsis

The Microbiology course covers the fundamental principles of microbiology. The structure, physiology and ecology of viruses, bacteria, fungi and protists will be discussed. Aspects of microbiology that are important in health, sanitation and food processing are also discussed. The basic microbiology laboratory skill will be applied via practical experiments in laboratory.

References:

- 1. Harley, J.P. 2011. Laboratory Exercises in Microbiology. 8th Ed. McGraw-Hill/Higher Education, USA. [QR41.2 .H37 2011].
- 2. Willey J., Sherwood, L. and Woolverton, C. 2011. Prescott's Microbiology. 8th Ed. McGraw Hill, USA. [QR41.2 .W54 2011].
- 3. Tortora, G.J., Funke, B.R. and Case, C.L. 2010. Microbiology: An Introduction 10th Edition. Benjamin-Cummings Publishing Company. USA. [QR41.2 .T67 2010]
- 4. Madigan, M.T., Martinko, J.M., Stahl, D.A. and Clark, D.P. 2009. Brock Biology of Microorganisms. 12th Edition. Pearson International, USA. [QR41.2 .B76 2009].
- 5. Black, J.G. 2008. Microbiology: Principles and Explorations. 7th Edition. John Wiley & Sons, USA. [QR41.2 .B52 2008]

DAU 23303 Environmental Chemistry

Prerequisite Courses: None

Synopsis

Environmental science is the foundation of the increased environmental understanding today and chemistry plays a major role in this. The properties and reactions of substances in the environment can profoundly influence the world we live in. These substances may be natural or man-made, and there is increasing interest in the interface between man-made systems and the natural environment. The course discusses the chemical basis of environmental science via studies in the areas of water, earth and atmosphere.

- 1. Beard, J. M. (2013). Environmental Chemistry. 2nd. Ed. Boca Raton : Taylor & Francis. TD193.B42 2013
- 2. Kumar, Uday (2013). Concepts in Environmental Chemistry TD193.K82 2013
- 3. Harnung, S.E. (2012). Chemistry and the Environment TD193.H39 2012
- 4. Hanrahan, G (2012). Key Concepts in Environmental Chemistry TD193.H38 2012
- 5. X. Li (2011), Green Energy: basic concepts and fundamental. TJ808 .L59 2011
- 6. Smith K.A. & Mullins C.E. (2000), Soil and Environmental Analysis: Physic Method (2nd Ed), S592.3 .S64 2004

DAS 12403 Analytical Chemistry

Prerequisite Courses: None

Synopsis

The course discusses the fundamentals of analytical chemistry, basic chemical concept of quantities and concentrations, the chemical equilibrium basic approach, basic statistical analyses in data evaluation, the electrochemical methods, gravimetric analyses, the basic spectrochemical analyses of UV/Vis and IR and chromatographic separation methods and their applications.

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
- 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

DAU 30203 Crime Scientific Investigation

Prerequisite Courses: None

Synopsis

The course covers specialized techniques of crime scientific investigation include firearms, arson, sexual assault and homicide. Examination of physical evidence such as firearms, bloodstains, glass and other trace evidence also will be learned together with the use of digital photography, computer software, alternate light sources, fluorescent powders and other chemical fingerprint techniques.

- 1. Bill Van Allen . (2007). Criminal Investigation. In seacrh of the truth. Pearson. Prentice Hall, [HV8073 .V36 2007]
- 2. Frank M. Schmalleger.(2006). Criminal justice today: an introductory text for the 21st Century. New York. Prentice Hall, [HV9950.S35 2006]
- 3. John Muncie. (2007). Criminal justice and crime control. London. SAGE, [HV7419 .C74 2007]
- John Paul Wright, Stephen G. Tibbetts, Leah E. Daigle (2008). Criminals in the making: criminality across the life course. Los Angeles, SAGE, [HV6080.W54 2008]
- 5. Evans C. (2009). Crime Scene Investigation. Chelsea House, [HV8073 .E92 2009]

DAU 23302 Analytical Instrumentation

Prerequisite Courses: 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).

Reference:

- Petrozzi, Sergio, Practical instrumental analysis methods, quality assurance and laboratory management, Weinheim: Wiley-VCH-Verl., 2013, [QD79.I5.P47 2013]
- 2. Cazes, Jack, Ewing's analytical instrumentation handbook, 3rd edition, Boca Raton, FL: CRC Press, 2005, [QD79.I5.E94 2005]
- 3. McMahon, Gillian, Analytical instrumentation: a guide to laboratory, portable and miniaturized instruments, Chichester: John Wiley, 2007, [QD79.15.M52 2007]
- Khandpur, R. S., Handbook of analytical instruments, New Delhi: McGraw-Hill, 1989, [Q185 .K48 1989]
- 5. Settle, Frank A., Handbook of instrumental techniques for analytical chemistry, Upper Saddle River, NJ: Prentice-Hall PTR, 1997, [QD79.I5 .H36 1997]

DAN 20103 Business and Entrepreneurship

Prerequisite Courses: 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.

- 1. Norliza Ghazali & Raudah Mohd Adnan: Perniagaan dan Keusahawanan, Penerbit UTHM, 2016
- 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)

DAY 10102 Occupational Safety and Health

Prerequisite Courses: 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.

DAU 25403 Fundamentals of Food Science and Technology

Prerequisite Courses: None

Synopsis

Fundamentals for food science and technology is integration course of basic principles of food science, human nutrition, food spoilage and sensory evaluation with the appropriate technology of food preservation and processing.

- 1. Murano, P.S. 2003. Understanding food science and technology. Belmont CA: Wadsworth. Thomson Learning. [TP370.M87 2003]
- 2. Parker, R. 2003. Introduction to food science. Albany NY: Delmar. [TP370.P37 2003]
- 3. Fellows, P.J. 2009. Food Processing Technology; Principles and Practice 2nd edition. CRC Press, Boca Raton. [TP370.F44 2000]
- 4. Brown, A. 2004. Understanding food: principles and preparation. 2nd. Ed. Belmont CA: Wadsworth, Thomson Learning. [TX354.B76 2004]
- 5. Berk, Z. 2009. Food Process Engineering and Technology. Elsevier, Amsterdam. [TP370.B47 2009]

DAU 24102 Fundamental Of Health Physics

Prerequisite Courses: None

Synopsis

This course introduces students to the knowledge required in the field of science and technology. The topics discussed are **Radioactivity**: Structural of Nucleus, Natural radioactivity, Types of radiation, Decay process, Transformation Kinetics. **Radiation Matter Interaction**: Nature of matter, Nuclear radiations, Nuclear reactions, Transformation mechanism. **Dosimetry Radiation**: Exposure, Radiation effects, Basic internal biological dosimetry, Unit of radiation dose **Biological Effects Against Radiation**: Dose Response feature, Radiation effects, Basic internal biological dose. **Radiation Safety Guide**: Basic principal of radiation protection, principles for reducing radiation exposure, Aspects of shielding in diagnostic radiology, The regulatory bodies. **Health Physics Instrumentation**: Radiation detectors, Dose measurement instrumentation, Newer radiation detection devices. **Radiation Protection**: External radiation protector, Internal radiation protector, Critical radiation protector.

References:

- 1. 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.
- 2. Jearl Walker, (2008). Fundamentals of Physics Extended 8th Ed. John Wiley & Sons (Asia) Pte.Ltd. ISBN 978-0-470-04618-0.
- 3. Husin Wagiran, (2006). Neutron Dan Penjanaan Tenaga Nuklear Edisi 2. Jabatan Fizik, Fakulti Sains Universiti Teknologi Malaysia, Skudai, Johor.
- 4. Dr.Azizan Ismail, et.al, (2005). Matriculation Physics Sem2. Higher Learning Publisher Sdn.Bhd 705037-A.

DAU 22202 Renewable Resources

Prerequisite Courses: None

Synopsis

The course focuses on the principles of renewable energy sources and applications, the benefit and disadvantages of the energy sources. The course discussess the fundamentals and principles of renewable energy such as solar energy, hydropower energy, wind energy, biomass and biofuel. The alternative energy such as wave energy, tidal energy, OTEC and geothermal energy and the energy storage and distributions are also discussed.

- John Twidell & Tony Weir. (2006). Renewable Energy Resources. 2nd ed. New York : Taylor and Francis Group. TJ808 .T84 2006
- 2. V.V.N Kishore. (2009). Renewable Energy Engineering and Technology. Principle and Practice. Earthscan, London. TJ808 .R52 2009
- Sorensen, Bent. (2004). Renewable energy : its physics, engineering, use, environmental impacts, economy and planning aspects. 3rd ed. Burlington, MA : Elsevier Academic Press TJ163.2 .S67 2004
- 4. Godfrey Boyle.(2004). Renewable energy. Oxford University Press. TJ808 .R46 2004
- Nelson, V. (2011). Introduction to renewable energy. Boca Raton, FL : CRC Press TJ808 .N44 2011

DAU 23302 Analytical Instrumentation

Prerequisite Courses: None

Synopsis

This course emphasises 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. Petrozzi, Sergio, Practical instrumental analysis methods, quality assurance and laboratory management, Weinheim : Wiley-VCH-Verl., 2013. QD79.I5 .P47 2013
- 2. Cazes, Jack, Ewing's analytical instrumentation handbook, 3rd edition, Boca Raton, FL : CRC Press, 2005. QD79.I5 .E94 2005
- 3. McMahon, Gillian, Analytical instrumentation : a guide to laboratory, portable and miniaturized instruments, Chichester : John Wiley, 2007. QD79.15.M52 2007
- 4. Khandpur, R. S., Handbook of analytical instruments, New Delhi : McGraw-Hill, 1989. Q185 .K48 1989
- 5. Settle, Frank A., Handbook of instrumental techniques for analytical chemistry, Upper Saddle River, NJ : Prentice-Hall PTR, 1997. QD79.I5 .H36 1997

DAU 22102 Waste Management

Prerequisite Courses: None

Synopsis

Waste management provides students with a basic understanding of the management of the different types of waste concerning resource use and conservation when attempting to satisfy ecological restraints and economic demands. This course also provide various approaches and strategies to conservation of natural resources and efforts to design and implement sustainable use of these resources.

- 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. 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.
- 4. MWH Staff. Water Treatment: Principles and Design. 2nd ed. New York, NY: Wiley, 2005. ISBN: 0471110183.
- 5. Edward S. Rubin. Introduction to Engineering & the Environment. McGraw Hill; 2001. .Call No.: TA170 .R83 2001 N7
- 6. Bishop P.L. Pollution Prevention: Fundamentals and Practice; McGraw Hill; 2000. .Call No.: TD897 .B57 2000

DAU 33203 Herbs

Prerequisite Courses: None

Synopsis

This course introduces students to the use of herbs as alternative medicines. The discussion includes introduction to natural products and their chemistry, taxonomy, the selection of plants, harvesting and extraction of active components. Classification of traditional herbs, herbal formulation and preparation, dosage and herbal remedies for several common diseases are also discussed. A brief description on traditional herbs versus modern medications, natural healing and herbal cleansing as well as plant-based vitamins and minerals are discussed.

References:

- 1. Xu, Rensheng. (2012). Introduction to natural products chemistry. Boca Raton : CRC Press, QD415 .I58 2012
- 2. Liu, Willow J. H. (2011). Traditional herbal medicine research methods: identification, analysis, bioassay, and pharmaceutical and clinical studies.Hoboken, NJ : John Wiley, RM666.H33 .T72 2011
- 3. Colegate, Steven M. (2008). , 2nd. Edition. Boca Raton : CRCQD415 .B56 2008
- 4. Aman, R. (2008).Tanaman berkhasiat ubatan. Kuala Lumpur : Dewan Bahasa danPustakaQK99 .R84 2008
- 5. Duke, James A. (2002). Handbook of medicinal herbs. 2nd. Edition. Boca Raton, FL : CRC Press, QK99.A1 .D84 2002
- National Geographic Society (U.S.) (2010), National Geographic guide to medicinal herbs : the world's most effective healing plants, Washington, D.C. : National Geographic, H33 .N37 2010 r
- 7. Dasgupta, Amitava (2011), Herbal supplements : efficacy, toxicity, interactions with western drugs and effects on clinical laboratory tests, Hoboken, NJ : John Wiley, RA1250 .H47 2011

DAU 21202 Food Quality Assurance and Safety

Prerequisite Courses: None

Synopsis

Food quality and safety assurance integrates the latest principles, practices, and terminology of food safety systems with those of quality management systems to provide an understanding of a single food quality management system. Chapters define industry terminology, review the differences and components of food quality and food safety, explain Quality Programs and Quality Systems, and thoroughly examine Good Manufacturing Practices, HACCP, Malaysian food laws and regulations and others.

- 1. Besterfield, D.H. 2009. Quality Control.8th ed.Upper Saddle River, NJ : Pearson. [TS156 .B47 2009]
- 2. Marriot, N.G.2006. Principles of Food Sanitation (5th. Edition), Springer
- Gould, W.A. & Gould, R.W. 2001. Total Quality Assurance for the Food Industries. 3rd. Ed.London : Woodhead Publishing, 2001. [ISBN 9781845696009]
- 4. Troller, J.A.1993.Sanitation in Food Processing (2nd. Edition), Academic Press Inc., San Diego. [ISBN 9780127006550]
- 5. Schmidt, R.H. & Rodrick, G.E. 2003. Food safety handbook. Hoboken, NJ : John Wiley. [TP373.5 .S35 2003]

DAU 24102 Fundamentals of Health Physics

Prerequisite Courses: None

Synopsis

This course introduces students to the knowledge required in the field of science and technology. The topics discussed are radioactivity such as radioactivity transformation mechanism, the transformation kinetics and natural in radioactivity. Analyze the application of radiation matter interaction when interaction with types of particles radiation such as alpha rays, beta rays and gamma rays. The concept of unit and measurement in radiation such as dosimetry, units, source strength, gamma rays specifications, beta radiation, internal radioisotope sediment, mean lifetime - age determination with radioisotopes and uses. Discuss the effect of radiation in biological and human body system relate to dose response feature, basic internal biological dosimetry, dose limitation systems, unit of radiation dose Sievert and Rem. State the radiation safety guide according to standardisation organisation, radiation protection philosophy and basic criteria security radiation (ICRP). Determine the health physics instrumentation for radiation detectors, particles counters instrumentation, dose measurement instrumentation, neutron measurements and calibration. Syntheses types of radiation protector such external radiation protector, internal radiation protector and critical radiation protector.

References:

- 1. Anshika Tuteja. 2007. Fundamentals of Physical Chemistry. Discovery Publishing House, New Delhi.
- 2. Ira N. Levine. 2009. Physical Chemistry, 6th. Ed. McGraw Hill, New York.
- **3.** Norbani Abdullah et al. 1998. Kimia Fizikal Asas Matrikulasi. Penerbit Fajar Bakti, Shah Alam, Malaysia.

DAU 34403 Ordinary Differential Equations

Prerequisite Course(s): None

Synopsis

Ordinary differential equation (ODEs) is an introductory subject to differential equations. Students will introduced to the first order ordinary differential equation and generate their knowledge to differentiate between separable, linear, homogeneous and exact equation. Next, students will apply the knowledge to solve any application in real life that related to ODEs. Later on, they will extend their differential equation knowledge to higher order which is second order ODEs using method undetermined coefficient and variation of parameter. Next, use the techniques of Laplace transform to solve ODEs with specified initial and boundary conditions. Lastly students will learn on how to apply the knowledge in real life problem.

References

Rujukan

- 1. Abd. Wahid Md. Raji and Mohd Nor Mohamad. (2010). *Differential Equations for Engineering Students*. Malaysia. UTM
- 2. Anton, H., Bivens, I. and Stephen, D. (2002). *Calculus*. 7th Ed. New York. John Wiley. [QA303 .A57 2002]
- Thomas, G. B., Finney, R.L. and Weir, M.D. (2001). *Thomas' Calculus and Analytic Geometry*. 9th Edition, Addison Wesley Publishing, Boston. [QA303 .T46 1996]
- 4. Greenberg and Micheal, D. (2012). *Ordinary Differential Equations*. Hoboken, NJ. Wiley. [QA372 .G73 2012]
- 5. Boyce, William, E. (2009). *Elementary Differential Equations*. Hoboken, NJ. Wiley. [QA371 .B69 2009]

DAU 30203 Crime Scientific Investigation

Prerequisite Courses: None

Synopsis

The course covers the criminal investigation function, the evidence classification, Locard's exchange principle, note taking and report writing, Crown brief, the interviewing witnesses and victim, interrogation of suspects, the objective of crime scene investigation, the burning bridges theory of CSI, Locard's exchange principle, crime scene security scenario, crime scene search method, specialized investigative technique, informant management, informants, initial informant evaluation, intelligence information v. evidence, informant confidentiality and security.

References:

- 6. Bill Van Allen . (2007). Criminal Investigation. In seacrh of the truth. Pearson. Prentice Hall. HV8073 .V36 2007
- 7. Frank M. Schmalleger .(2006). Criminal justice today : an introductory text for the 21st
- 8. Century. New York. Prentice Hall. HV9950 .S35 2006
- John Muncie. (2007). Criminal justice and crime control. London. SAGE. HV7419 .C74 2007
- John Paul Wright, Stephen G. Tibbetts, Leah E. Daigle (2008). Criminals in the making : criminality across the life course.Los Angeles , SAGE. HV6080 .W54 2008.
- 11. Evans C. (2009). Crime Scene Investigation. Chelsea House. HV8073 .E92 2009

DAU 32303 Environmental Chemistry

Prerequisite Courses: None

Synopsis

Environmental science is the foundation of the increased environmental understanding today and chemistry plays a major role in this. The properties and reactions of substances in the environment can profoundly influence the world we live in. These substances may be natural or man-made, and there is increasing interest in the interface between man-made systems and the natural environment. The course discusses the chemical basis of environmental science via studies in the areas of water, earth and atmosphere.

- Beard, J. M. (2013). Environmental Chemistry. 2nd. Ed. Boca Raton : Taylor & Francis. TD193.B42 2013
- (2) Kumar, Uday (2013). Concepts in Environmental ChemistryTD193.K82 2013
- (3) Harnung, S.E. (2012). Chemistry and the Environment TD193.H39 2012
- (4) Hanrahan, G (2012). Key Concepts in Environmental Chemistry TD193.H38 2012
- (5) X. Li (2011), Green Energy: basic concepts and fundamental. TJ808 .L59 2011
- Smith K.A. & Mullins C.E. (2000), Soil and Environmental Analysis: Physic Method (2nd Ed), S592.3 .S64 2004

DAU 24202 Introduction To Modern Physics

Prerequisite Courses: None

Synopsis

This course introduces students to basic modern physics knowledge that begins with brief historical background of modern physics, arises from failures of classical physics. Further, the concept of special relativity regarding the relationship between space and time is discussed. In addition, this course also discuss quantum theory, atomic structure, the particle matter of nature, and few experiments conducted to confirm atomic structure and the discovery of x-rays properties.

References:

- 1. Giambattisa, A., Richardson, B.M., and Richardson, R.C. (2003) College Physics With an Integrated Approach to force and Kinematics. 4th Ed. McGraw-Hill
- 2. Douglas C. Giancoli, (2000). Physics for Scientist and Engineers with Modern Physics, 3rd Ed., Prentice Hall.
- 3. Randall D. Knight (2008). Physics for Scientists and Engineers A Strategic Approach with Modern Physics, 2nd Ed. Pearson Addison Wesley.
- 4. Halliday D, Resnick R, and Walker J (2005). Fundamentals of Physics, 7th Ed. Wiley.
- 5. Husin Wagiran (2003). Fizik Moden. UTM Publisher.

DAU34303 Thermodynamics

Prerequisite Courses: None

Synopsis

Thermodynamics is essentially the study of the internal motions of many body systems. In general, this course introduces to students to the principles, concepts, and laws of classical and statistical thermodynamics and its applications that require quantitative knowledge of thermodynamic properties from a macroscopic to a molecular level. It covers a basic concepts of thermodynamics, thermodynamic properties of materials and thermodynamic processes. Topics covered include the energy transfer and energy analysis of systems and processes using the explained first and second laws of thermodynamics. The principles of gas power and refrigeration cycles are also briefly highlighted.

References:

- 1. Smith, J.M.; Van Ness, H.C.; Abbott, M.M.; "Introduction to Chemical Engineering Thermodynamics", 7th edition, McGraw-Hill, 2005.
- 2. Sandler, S. I., Chemical and Engineering Thermodynamics, 3rd ed., New York, Wiley, 2006.
- 3. Felder and Rousseau, Elementary Principles of Chemical Processes, 3rd ed., New York, Wiley, 2006.
- **4.** R.A. Serway, (1997). Physics for Scientists and Engineers, International Editions.
- **5.** Douglas C. Giancoli, (2000). Physics for Scientist and Engineers with Modern Physics, 3rd Ed., Prentice Hall.

DAU 25102 Final Year Project I

Prerequisite Courses: None

Synopsis

The student is required to do a research project in the final year of study in a field related to technology and applied science. The project is divided into two stages, Final Year Project 1 (FYP1) and Final Year Project 2 (FYP2). The FYP2 brings 3 credit hours carried out in the Semester I of the third year study. The student is

required to prepare and present the final report of the project in the FYP2 Seminar held at the end of the semester.

References:

- 1. Thesis writing guideline, UTHM, (2012).
- 2. Implementation Guide for Diploma in Applied Science, Center for Diploma Studies, UTHM, (2014).
- 3.

DAU 35203 Final Year Project II

Prerequisite Courses: None

Synopsis

The student is required to do a research project in the final year of study in a field related to technology and applied science. The project is divided into two stages, Final Year Project 1 (FYP1) and Final Year Project 2 (FYP2). The FYP2 brings 3 credit hours carried out in the Semester I of the third year study. The student is required to prepare and present the final report of the project in the FYP2 Seminar held at the end of the semester.

References:

- 1. Thesis writing guideline, UTHM, (2012).
- 2. Implementation Guide for Diploma in Applied Science, Center for Diploma Studies, UTHM, (2014).

DAU 25304, Industrial Training

Prerequisite Courses: Completed 60% of minimum credit requirement.

Synopsis

Industrial Training provides students with the real conditions of employment in the field of applied science to enhance self-esteem, technical skills and interpersonal skills.

- 1. Panduan Penulisan Tesis UTHM, (2012).
- 2. Panduan Pelaksanaan Projek Diloma Sains Gunaan, Pusat Pengajian Diploma UTHM (2014).

Career and Further Education Prospect

Applied science covers a broad field which include food technology, industrial chemistry, biotechnology, forensic science and applied physics. Career prospects for graduates of Diploma in Applied Sciences such as Science Officer and Assistant Laboratory Assistant in the industrial sector or research centers.

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









MQF BASED ON QUALIFICATION LEVEL AND EDUCATIONAL PATHWAY

Malaysian Qualification Framework

MOF		Sectors	Lifelene	
Levels	Skills	Vocational and Technical	Higher Education	Learning
8			Doctoral Degree	
			Masters Degree	
7			Postgraduate Certificate & Diploma	earning
6	-		Bachelors Degree	periential L
			Graduate Certificate & Diploma	on of Prior Ex (APEL
5	Advanced Diploma	Advanced Diploma	Advanced Diploma	Accreditati
4	Diploma	Diploma	Diploma	
3	Skills Certificate 3	Vocational	Certificate	
2	Skills Certificate 2	and Technical Certificate		
1	Skills Certificate 1			

MALAYSIAN QUALIFICATIONS FRAMEWORK: QUALIFICATIONS AND LEVELS

Malaysian Qualification Framework



Centre for Academic Development and Training Universiti Tun Hussein Onn Malaysia 86400 Batu Pahat, Johor Darul Ta'zim www.uthm.edu.my