



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

School of
Professional and
Continuing
Education
(SPACE)

ACADEMIC GUIDE BOOK

Centre for Diploma
Studies

2023/2024



<http://space.utm.my/diploma>

UTM DIPLOMA PROGRAMME

ACADEMIC GUIDEBOOK

Thirty-Fifth Edition: July 2023

2023/2024

All Rights Reserved

NOTE:

Information in this Academic Guidebook is true at time of printing.
Full Time Programme UTMSPACE reserves the right to amend any information
without prior notification.

ENQUIRIES:

PUSAT PENGAJIAN DIPLOMA (PPD)

SPACE

Universiti Teknologi Malaysia

Jalan Sultan Yahya Petra, 54100 Kuala Lumpur

Tel No: 03-2615 4388 / 4868

Fax No: 03-2615 4315

Email : diploma@utm.my

Website

<http://space.utm.my/diploma>

Student Portal

<https://studentdiploma.utmspace.edu.my>

table of **CONTENTS**

NATIONAL EDUCATION PHILOSOPHY.....	I
UNIVERSITY PHILOSOPHY, VISION,MISSION, STRATEGIC THRUSTS AND CORE VALUES.....	II
SPACE VISION, MISSION, MOTTO AND CORE VALUES.....	III
UTM GRADUATE ATTRIBUTES	IV
FACILITIES IN UTM KUALA LUMPUR	V
FACILITIES IN UTM JOHOR BAHRU	VII
WELCOMING SPEECH	IX
DIPLOMA PROGRAMME AT A GLANCE.....	1
ORGANIZATION STRUCTURE	2
HEAD OF PROGRAMME AND COORDINATOR	3
DEPARTMENT OF ENGINEERING.....	4
Diploma in Civil Engineering	
Programme Specifications.....	5
Curriculum Structure.....	13
Synopsis of Core Courses.....	16

Diploma in Electronic Engineering

Programme Specifications.....	21
Curriculum Structure.....	29
Pre-requisite	32

Diploma in Electrical Engineering

Programme Specifications.....	33
Curriculum Structure.....	41
Pre-requisite	44
Synopsis of Core Courses (DDWE, DDWH)	45

Diploma in Mechanical Engineering

Programme Specifications.....	53
Curriculum Structure.....	61
Pre-requisite	63
Synopsis of Core Courses.....	65

Diploma in Chemical Engineering

Programme Specifications.....	71
Curriculum Structure.....	78
Pre-requisite	81
Synopsis of Core Courses.....	82

DEPARTMENT OF MANAGEMENT	87
Diploma in Property Management	
Programme Specifications.....	88
Curriculum Structure.....	95
Pre-requisite	98
Synopsis of Core Courses.....	99
Diploma in Technology Management	
Programme Specifications.....	106
Curriculum Structure.....	113
Pre-requisite	116
Synopsis of Core Courses.....	117
Diploma in Accounting	
Programme Specifications.....	123
Curriculum Structure.....	130
Pre-requisite	133
Synopsis of Core Courses.....	134

Diploma in Islamic Studies Education

Programme Specifications.....	140
Curriculum Structure.....	147
Pre-requisite	150
Synopsis of Core Courses.....	151

DEPARTMENT OF GEOMATICS AND BUILT ENVIRONMENT..... 160

Diploma in Land Surveying

Programme Specifications.....	161
Curriculum Structure.....	168
Pre-requisite	171
Synopsis of Core Courses.....	172

Diploma in Urban And Regional Planning

Programme Specifications.....	177
Curriculum Structure.....	184
Pre-requisite	187
Synopsis of Core Courses.....	188

Diploma in Quantity Surveying

Programme Specifications.....	194
Curriculum Structure.....	201
Pre-requisite	204
Synopsis of Core Courses.....	205

Diploma in Architecture

Programme Specifications.....	212
Curriculum Structure.....	221
Pre-requisite	224
Synopsis of Core Courses.....	225

DEPARTMENT OF COMPUTER SCIENCE AND SERVICES 231

Diploma in Computer Science

Programme Specifications.....	232
Curriculum Structure.....	239
List of Elective Courses	241
Pre-requisite	242
Synopsis of Core Courses.....	243
Synopsis of Elective Courses	247
Synopsis of Industrial Training Courses	248

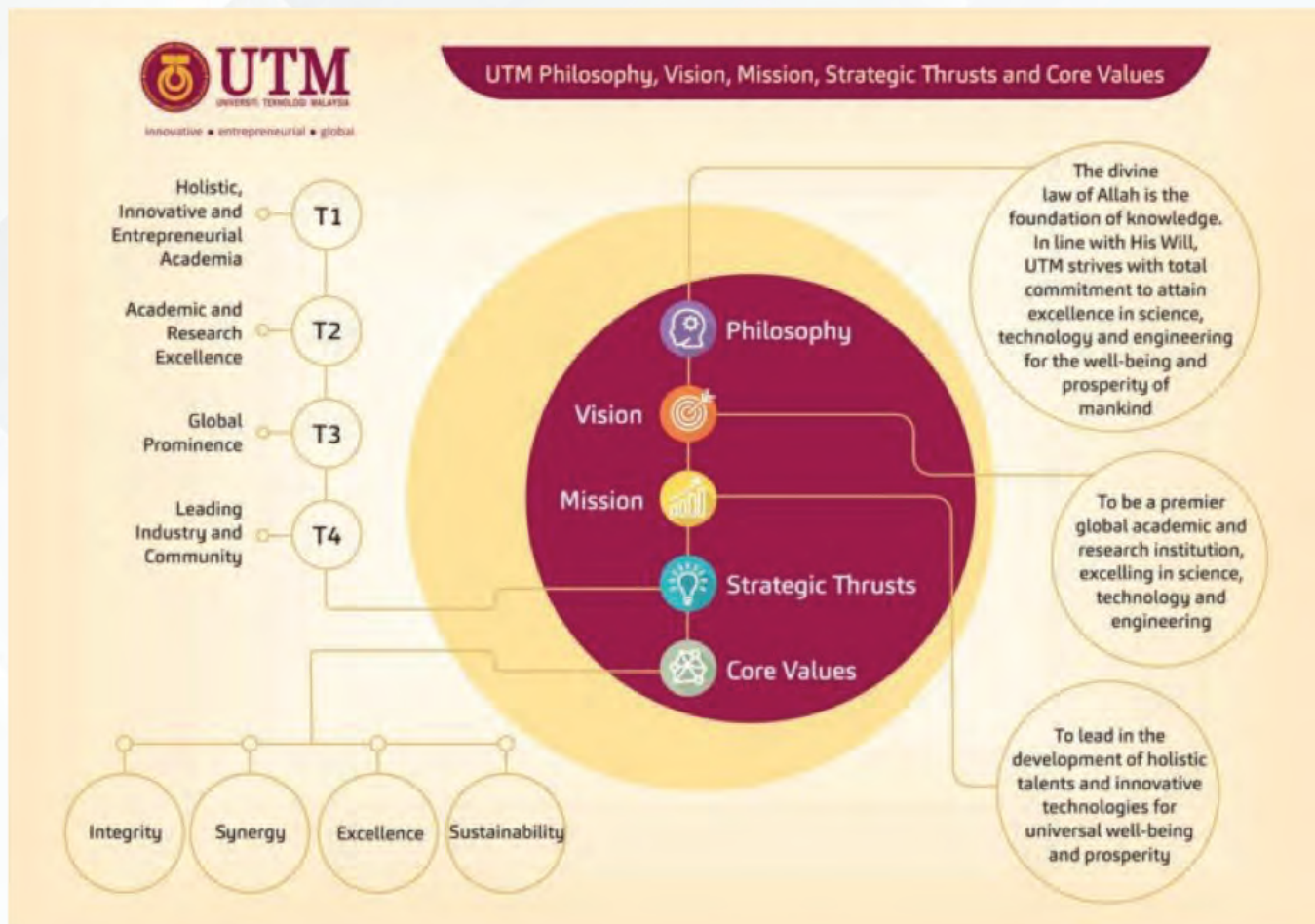
Science and Services

Synopsis of Science Courses.....	249
Synopsis of Language Courses.....	252
Synopsis of University Courses.....	253
Synopsis of Co-curriculum Courses and Services Learning Course.....	254

Nasional Education Philospphy

Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving high level of personal well-being as well as being able to contribute to the harmony and betterment of the family, the society and the nation at large.

University Philosophy, Vision, Mission, Strategic Thrusts and Core Values



Recourses: <https://www.utm.my/>

SPACE Vision, Mission, Motto and Core Values

SPACE VISION

To be an international centre of excellence in Lifelong Learning.

SPACE MISSION

To provide quality continuing education programmes that are widely accessible, customized and flexible to meet customer expectations.

SPACE MOTTO

Leading Transnational Continuing Engineering Education.

SPACE CORE VALUES

Quality Driven
Student Centred
Flexible Learning
Global Outlook

UTM Graduate Attributes

✓ COMMUNICATION SKILLS

- CS1 Ability to convey ideas in writing clearly, effectively and comprehensible.
- CS2 Ability to deliver ideas orally in a clear, effective and comprehensible manner.
- CS3 Ability to listen actively and respond accordingly.
- CS4 Ability to make clear presentations to a diverse audience with confidence.
- CS5 Ability to use a variety of media in presentations.
- CS6 Ability to negotiate and reach agreement.
- CS7 Ability to communicate with people from different cultures and backgrounds.
- CS8 Ability to use third language in conversations when the need arises.

✓ THINKING SKILLS

- TH1 Ability to define and analyze complex, overlapping, ill-defined problems and make well-supported judgment.
- TH2 Ability to expand on and discuss ideas.
- TH3 Ability to look for alternative ideas and creative solutions.
- TH4 Ability to 'think outside the box'.
- TH5 Ability to think critically.
- TH6 Ability to think holistically and systematically.

✓ SCHOLARSHIP

- SC1 Ability to seek and manage relevant information from a variety of sources.
- SC2 Ability to be receptive to new ideas towards self-directed or autonomous learning.
- SC3 Ability to develop an inquisitive mind.
- SC4 Ability to use systematic research methodology.

✓ LEADERSHIP AND TEAMWORKING SKILLS

- TW1 Ability to establish rapport, interact and work effectively with others to accomplish common objectives.
- TW2 Ability to lead and influence team members to complete given tasks.
- TW3 Ability to understand other people's attitude and behavior, respect their ideas and have mutual trust.
- TW4 Ability to understand responsibility towards group decision.

✓ ADAPTABILITY

- AD1 Ability to adapt to the culture of new communities and work environment.
- AD2 Ability to recognize potential for improvement.
- AD3 Ability to apply known solutions to new situations.
- AD4 Ability to initiate and implement change.
- AD5 Ability to work effectively under pressure.



UTM GRADUATE ATTRIBUTES

✓ GLOBAL CITIZEN

- GC1 Spiritually grounded, compassionate and caring.
- GC2 Ability to keep updated with current world issues.
- GC3 Ability to act ethically in making decisions and interacting with the community.
- GC4 Ability to act professionally and responsibly in carrying out duties.
- GC5 Ability to understand the impact of socio-cultural, economic, environmental and politics on professional practices.
- GC6 Ability to practice and prioritize principles of sustainability in making decisions.

✓ ENTERPRISING SKILLS

- ES1 Ability to identify opportunities (including business).
- ES2 Ability to use innovative methods in dealing with issues.
- ES3 Willingness to take risks.
- ES4 Ability to use entrepreneurial mindset in dealing with problems.
- ES5 Ability to be resilient.
- ES6 Ability to act effectively and imaginatively in difficult situations.

Facilities in UTM Kuala Lumpur

UTM Kuala Lumpur Library

UTM Kuala Lumpur Library is a branch library situated at UTMKL, Jalan Sultan Yahya Petra, Kuala Lumpur. Currently, the library has 28 staffs comprises of 6 professionals and 22 support staff. Among the services offered are Reference and Research Support Consultant, Library Information Skill Classes, Literature Searching Workshop, Electronic Databases and Inter-Library Loan (ILL). The library also provide the facilities to the users such as Research Carrel (10 rooms), Carrel Room (22 rooms), Discussion Room (12 rooms), Seminar Room (4 rooms), Information Searching Lab, Reading Area, Computer Zone (130 computers) and 24 hours Study Room. To ease the process of borrowing books and printed materials in the library, users could use the Online Public Access Catalog (OPAC) which is called LESTARI. It helps users to find the materials online. The library portal can be accessed via ent.library.utm.my.

Undergraduates Affairs Office

Responsible in students' activity management, sponsorship, loans, health, accommodation, welfare, and undergraduates discipline.

Undergraduates Clinic

Students could receive health services besides going to the government hospitals.

Accommodation

Kediaman Siswa Jaya (KSJ) is situated at Setapak Jaya which is 2km from UTMKL and could accommodate 3000 students. Bus service is provided for students to go to the campus from 6.45am to 10.45 pm. There are also food court, mosque, minimart, laundry, mini cinema, and sports facilities provided for students.

Transportation

Bus service is provided from KSJ to the main campus according to students' lectures timetable. The journey from KSJ to UTMKL takes about 20 minutes.

Sports and Recreation

This facility is handled by Sports Unit. The unit is responsible in expanding and developing sports culture among students besides encouraging positive moral values among students and staff.

Mosque

UTMKL mosque provides consultancy services to individuals, society and institution inside and outside university.

Students Minimart

These shops are situated in the campus and in the students' hostel.

Electronic Banking Central

Automatic Teller Machines (ATM) are available in the campus for students and staff.

Facilities in UTM Johor Bahru

UTM Johor Bahru Library

UTM Library occupies a central location at the Universiti Teknologi Malaysia (UTM) main campus in Skudai. It has a branch at the UTM Kuala Lumpur and also branches at several faculties, learning centres and Centres of Excellence. UTM Library was officiated by Her Majesty Sultanah Zanariah, the Chancellor of University Teknologi Malaysia on 3rd February 1991.

Undergraduates Affairs Office

Responsible in students' activity management, sponsorship, loans, health, accommodation, welfare, and undergraduates discipline.

Undergraduates Clinic

Students could receive health services besides going to the government hospitals.

Accommodation

Students Affairs Office provides 10 residential colleges that can accommodate up to 14,774 students in one academic session and 301 housing units for students who bring along their spouse and children to stay with them throughout their studies in UTM. There are two types of housing available for the students. One of which is the apartment type (a – two – room and a – three – room apartment) and the other is the town house with two rooms. Each housing unit is furnished with basic facilities such as furniture and refrigerator for the students' convenience. Among the facilities provided at each residential college are cafeterias, multipurpose hall, muslim prayer room, tennis courts, internet, convenient store and common room besides other facilities in the students' rooms.

Transportation

The University also provides transport services for students to commute from their on-campus residential colleges or off-campus accommodation to classes. There are more than 30 buses that provide services from 7.15 am to 11.30 pm everyday. The off-campus residential areas covered by the service include Taman Universiti, Taman Sri Skudai, Taman Sri Pulai, Taman Teratai, Taman Desa Skudai and Taman Sri Putri. In addition, there are also public buses such as the Transit Link and Maju bus companies, which ply between Taman Universiti via the ring road of the campus to Johor Bahru City Centre.

Sports and Recreation

UTM Sports Excellence Unit is responsible for the development and development of sports and recreation at the University through the implementation of sports and recreational programs.

Mosque

The construction of the Sultan Ismail Mosque began in 1986 and was completed in 1990. The mosque can accommodate about 10,000 worshippers and has many facilities such as mini-library, seminar rooms, lecture hall, morgue and offices. The planning of the Skudai campus was based on the concept of centralising the main activities of common interests around the mosque. The mosque is located right at the centre of the campus surrounded by other buildings within walking distance, and is the most outstanding building of the university. Its location at the centre of the campus is in line with the concept of Islamic learning in which the mosque is the source of the acquisition and dissemination of knowledge and in life as well with the university motto, "For God and Mankind".

Dining

UTM campus have at least 30 food centre (cafeterias), where the student can have breakfast, lunch as well as dinner at a discounted student rate. Some cafeteria is special and open 24 hours a day and some even offering western food style. Average spending on food per meal is RM5.00. If you prefer canned drink, the canteen is everywhere inside the academics area. The cafeteria are a walking distances from the hostels. There are more than 100 catering outlets across the campus, including air-conditioned restaurants, cafeterias, fast-food restaurants selling a whole variety of food including traditional Malay, Chinese, Indian and Western cuisines. There are many shops on campus including bookstores, photocopy centers, mobile phone centers, news agents, launderettes, hair dressing and beauty saloons, computer shops, travel agencies and more than 20 mini grocery stores, mostly within the students' residential colleges. Just outside UTM campus, through second gate (you have to go through padang kawad), there is McDonald Family Restaurant that open 24Hr per day.

Bank & Post Office

CIMB Bank becoming an official bank for UTM. But there are have ATM/Teller booth machine of Bank Simpanan Nasional, Maybank and Bank Islam Malaysia Berhad in the campus. One post office is located inside the campus, inside student union building. Pos-Laju and pay-bill services are there, and they open post office for the whole weeks office hour, except Sunday.

Welcoming Speech

Assalamualaikum and Greetings,

Welcome to Universiti Teknologi Malaysia and, in particular, to Pusat Pengajian Diploma (PPD), School of Professional and Continuing Education (SPACE) UTM. Thank you for visiting our portal.

UTM Diploma Programmes have evolved to become internationally recognized programmes in producing competent semi-professional employees in their respective fields of studies. Currently, we offer thirteen (14) diploma programmes in engineering and non-engineering fields of studies. All our diploma programmes have been designed in accordance to the Malaysian Qualifications Agency (MQA) guidelines and will be continuously reviewed to maintain their standards and quality.

I sincerely hope that this portal will be the right platform for students to obtain important information pertaining to the programmes namely; the entry requirements, curriculum, and the career path of our mainstream programmes.

PPD SPACE is proud to welcome all potential students to be part of us and we will surely strive to give you our best throughout your learning process here. We are truly honoured with the trust given to assist you in shaping your finest future career.



PROFESSOR TS. DR. NAZRI BIN ALI

Chair,

School of Professional and Continuing Education (SPACE) UTM

Diploma Programme at A Glance

The diploma programmes have been offered since the inception of UTM under their respective faculties. However, in June 1995, a new faculty named Diploma Programme Studies were established to offer all these programmes at UTM branch campus in Jalan Sultan Yahya Petra, Kuala Lumpur. On 15 May 2006, we were called College of Science and Technology (CST). The aim of CST was to produce trained professionals who are skilled and efficient in engineering, science and technology management. During the early years, CST has eight diploma programmes with 4600 enrolment and presently, it offers 13 diploma programmes. Starting 1 June 2010, all diploma programmes are run by UTMSPACE, a dynamic faculty in UTM which has successfully managed programmes and professional courses according to market needs. The programmes offered are listed below:

Programmes Offered:

Department of Engineering

- Diploma in Civil Engineering
- Diploma in Electronics Engineering
- Diploma in Electrical Engineering
- Diploma in Mechanical Engineering
- Diploma in Chemical Engineering

Department of Accounting and Management

- Diploma in Property Management
- Diploma in Technology Management
- Diploma in Accounting
- Diploma in Islamic Studies Education

Department of Geomatics and Built Environment

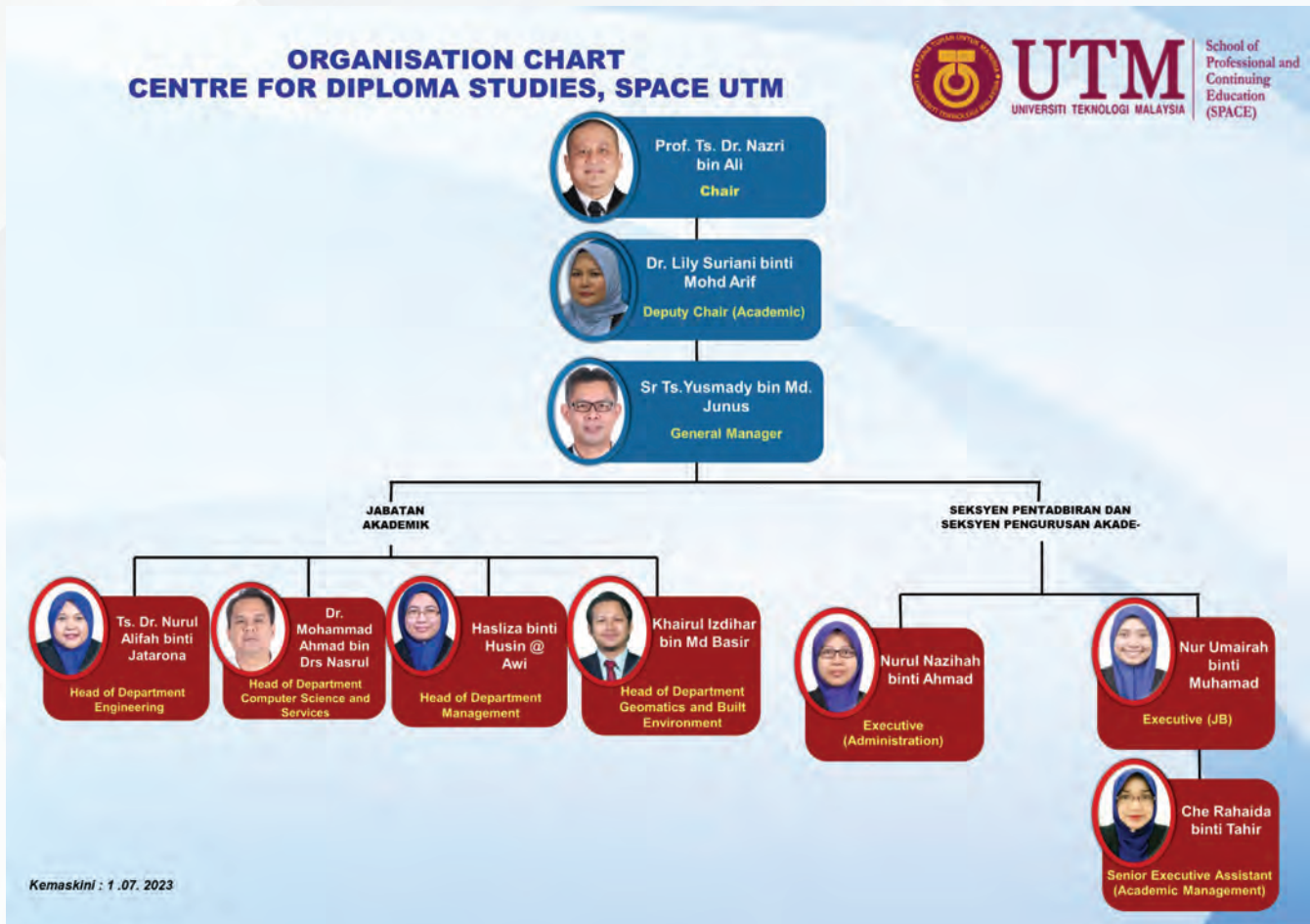
- Diploma in Quantity Surveying
- Diploma in Urban and Regional Planning
- Diploma in Architecture
- Diploma in Land Surveying

Department of Computer Science and Services

- Diploma in Computer Science

The programmes offered are based on semester system and requires 3 years to complete (or 6 semesters). Student shall receive their diploma after meeting the programme requirements which have been set by the faculty and university.

Organization Structure



Head of Programme and Coordinator

HEAD OF PROGRAMME AND COORDINATOR PUSAT PENGAJIAN DIPLOMA, SPACE UTM



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

School of
Professional and
Continuing
Education
(SPACE)

DEPARTMENT

HEAD OF PROGRAMME

COORDINATOR

DEPARTMENT OF
ENGINEERING



**Ts. Erni Syahada binti
Mazwi Ehsan**
Head of Programme
Diploma In Civil Engineering

DDWA



Ts. Zaimah binti Daud
Head of Programme
Diploma In Electronics Engineering

DDWE



Ts. Othman bin Jaïs
Head of Programme
Diploma In Electric Engineering

DDWH



Noor Izaaty binti Azhar
Head of Programme
Diploma In Mechanical Engineering

DDWJ



Ts. Chia Yaw Kwan
Head of Programme
Diploma In Chemical
Engineering

DDWT

DEPARTMENT OF
GEOMATICS AND
BUILT
ENVIRONMENT



**Sr. Gs. Amir Hamzah bin
Othman**
Head of Programme
Diploma In Land Surveying

DDWL



**Siti Fatimah Hani binti
Bilyamin**
Head of Programme
Diploma In Urban and Regional Planning

DDWN



**Ts. Rosmiza binti Awang
Noh**
Head of Programme
Diploma In Quantity Surveying

DDWQ



Sarah Erina binti Roseley
Head of Programme
Diploma In Architecture

DDWR

DIPLOMA IN CAMPUS UTM JB



**Ts. Ain Hasmiza binti
Suffian**
Coordinator of Programme
Diploma In Architecture

DDWR JB



Siti Nurfatma binti Imran
Coordinator of Programme
Diploma In Quantity Surveying

DDWQ JB

DEPARTMENT OF
COMPUTER
SCIENCE
AND SERVICES



Norzaharawati Binti Busu
Head of Programme
Diploma In
Computer Science

DDWD



**Nadia Diana binti Muhd
Rusdi**
Coordinator of Programme
Diploma In Computer Science

DDWD JB



Shabitah binti Ramley
Coordinator

**SCIENCE AND
MATHEMATICS**



Umijah binti Madzen
Coordinator

GENERAL COURSE



Ramana Bt Abd. Rahim
Coordinator

ENGLISH LANGUAGE

DEPARTMENT OF
MANAGEMENT



**Sr Nik Hamidi bin Nik
Mustapha**
Head of Programme
Diploma In
Property Management

DDWF



**Diyana Nabillah binti Md.
Burhan**
Head of Programme
Diploma In
Technology Management

DDWG



Nur Solehah binti Sham
Head of Programme
Diploma In Accounting

DDWP



**Dr. Nik Mohd Zaim Bin Ab
Rahim**
Coordinator of Programme
Diploma In Islamic Studies
Education

DDWI

DEPARTMENT OF

ENGINEERING

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Civil Engineering		
2. Final Award		Diploma in Civil Engineering		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Engineering Technology Accreditation Council (ETAC)		
6. Code of Programme		DDWA		
7. Language(s) of Instruction		Bahasa Melayu and English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full-time		
11. Study Duration		<u>Full Time</u> : Minimum : (3 Years) Maximum : (4 ½ Years) <u>Part Time</u> : Minimum : (4 Years) Maximum : (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	15
Short	0	3	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of THREE (3) credits (GRADE C) inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects in Science / Technical / Vocational Institution

AND

Obtained a pass (GRADE E) in English and Additional Mathematics

AND

Not having any disabilities which may hinder practical work

OR

Obtained qualification from Technical / Vocational / Skill Institution or equivalent which, relevant and recognized with credit.

- Bahasa Melayu SVM Code 1104 AND Academic CGPA ≥ 3.33 AND Vocational CGPA ≥ 3.67

OR

Passed in Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / recognized Certificate which is equivalent and related with the Diploma Programme applied by the student AND obtains a minimum cumulative grade point average (CGPA) of 2.00.

OR

Matriculation Certificate (Science Stream and Engineering) by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Passed O-Level with a minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of Science subjects

Note:

- *Candidates who are admitted with Certificate without credits in Mathematics at the SPM or equivalent can be admitted IF the Mathematics subject offered is equivalent to the SPM level.*

13. Programme Educational Objectives:

Programme Educational Objectives is designed to ensure that graduates who:

- Competent, creative and innovative in solving various problems in the field of Civil Engineering
- Communicate effectively with leadership skill and self-confidence while striving for career advancement through life-long learning
- Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge	Apply knowledge of applied mathematics and science, engineering fundamentals and civil engineering principles to wide practical procedures and practices.	Lectures, tutorials, industrial training, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Project, Presentation and Industrial training report
PLO2 Problem Analysis	Identify and analyse civil engineering problems that lead to substantial conclusions using specific method of analysis.	Project-based learning, active and cooperative learning, case studies, problem-based learning.	Test, Assignment, Project and Project report.
PLO3 Design/development of solutions	Design solution for technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.	Project-based learning, active and cooperative learning, case studies, problem-based learning.	Test, Assignment, Report and project report.

(b) Generic Skills			
Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO4 Investigation	Conduct investigation of well-defined problems, locate and search relevant references, conduct standard tests and measurements.	Laboratory work, Industrial training, project and group projects.	Assignment, Report, Log book, Laboratory works and Project report.
PLO5 Modern Tool Usage	Apply computational techniques, resources, and modern engineering and IT tools to solve engineering problems with an understanding of the limitations.	Laboratory work, active and cooperative learning Industrial training, project and group projects.	Assignment, Laboratory reports, Industrial training report, Project report.
PLO6 The Engineer and Society	Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the responsibilities relevant to the technician practice and solutions to engineering problems.	Lecture, Assignments, Projects, Industrial training and laboratory works.	Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report.
PLO7 Environment and Sustainability	Explain and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts	Lecture, Assignments, Projects, Industrial training and laboratory works.	Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report

PLO8 Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of technician practice with integrity.	Lecture, Assignments, Projects, Industrial training and laboratory works.	Assignment, Project and Industrial training report
PLO 9 Individual and Team Work	Work independently and as a member or a leader in team to manage project in a diverse technical team towards achieving common goal.	Assignments, Projects, Industrial training, cooperative learning and discussion.	Project/assignment reports, Industrial training report and Presentations.
PLO 10 Communications	Communicate effectively through written and oral mode and collaborate in managing team relationships in the engineering community and all levels of society.	Assignments, cooperative learning, Laboratory report Industrial training and projects	Assignment, Project report, Industrial training report, Laboratory report and Presentations.
PLO11 Project Management and Finance	Demonstrate knowledge and apply engineering management principles and entrepreneur culture to manage projects/ activities in multi-disciplinary environments.	Assignment, Projects, directed reading, internet searching, lectures, active and cooperative learning.	Project report and Assignment reports.
PLO12 Life Long Learning	Recognise the need for and engage in independent and life-long learning with digital applications and complex numerical and graphical/visual data.	Assignment, Projects, Industrial training directed reading, cooperative learning and discussion.	Project report, Log book, assignment reports and Industrial training report.
15. Total Credit Hours to Graduate		96 credit hours	

16. Programme structures and features, curriculum and award requirements

This programme is offered on full-time based on a 2 Semester Academic Session with several subjects being delivered and assessed in each semester. Assessment is based on coursework, project and final examination.

Assessment (Refer to UTM Academic Regulations):

i. Lecture based course:

Final examinations (not less than 40%)

Coursework.

ii. Skill-based course:

100% Coursework.

Award requirements:

Students should achieve a total of 96 credit hours with minimum CPA of 2.00.

17. Career Prospect

Diploma Civil Engineering holders can work as an assistant engineer or technical assistant in civil related engineering industry or any engineering industry or further studies for a Bachelor degree at local or foreign universities.

18. UTM Diploma ++ Programme

Students are given the opportunity to enroll in short courses offered by university that are relevant to the engineering field during their studies.

19. Our Uniqueness

This program is designed to:

- i. Equip students with engineering skills through hands-on laboratories.
- ii. Comply to MQA and ETAC Standard

Students will go through four months of Industrial Training with established civil engineering firm or government sector in order to expose them with real working experience as a technician or assistant civil engineer. Also, the students to gain additional qualifications, broaden their knowledge in order to qualify for

entry into honours or postgraduate programs, or undertake professional development for a range of purposes.

20. Facilities Available

List of Laboratories

- a. Materials Laboratory
- b. Soil and Geotechnical Laboratory
- c. Fluid Mechanics, Hydraulics and Hydrology Laboratory
- d. Structure Laboratory
- e. Highway and Traffic Laboratory
- f. Environmental Laboratory
- g. Computer Laboratory
- h. Surveying Laboratory
- i. Engineering Drawing Studio

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS 1182	Appreciation for Ethics and Civilization	2
UHLB 1032	Introductory Academic English	2
DDWS 1113	Engineering Mathematics I	3
DDWS 1712	Physics	2
DDWS 1412	Chemistry	2
DDWA 1013	Civil Engineering Drawing	3
DDWA 1212	Civil Engineering Materials	2
DDWA 1082	Introduction to Civil Engineering	2
Total		18

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UHLB 1042	Intermediate Academic English	2
ULRS 1012	Value and Identity	2
DDWS 1023	Engineering Mathematics II	3
DDWA 1093	Engineering Surveying	3
DDWA 1113	Engineering Mechanics	3
DDWA 1022	Contract & Estimation	2
DDWH 1102	Mechanical & Electrical Systems	2
Total		17

YEAR 2 (SEMESTER 3)

Code	Course	Credit
DDWA 2062	Civil Engineering Laboratory I	2
DDWA 2123	Mechanics of Materials & Structures	3
DDWA 2313	Fluid Mechanics	3
DDWA 2413	Soil Mechanics	3
DDWA 2513	Environmental Engineering	3
DDWA 2032	Civil Engineering Construction	2
Total		16

YEAR 2 (SEMESTER 4)

Code	Course	Credit
UKQF 2xx2	Co-Curriculum and Service Learning	2
DDWA 2043	Project Management & Construction Practice	3
DDWA 2323	Hydraulics	3
DDWA 2133	Structural Steel Design	3
DDWA 2143	Theory of Structure	3
DDWA 2433	Highway and Traffic Engineering	3
Total		17

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWA 3054	Final Year Project	4
DDWA 2072	Civil Engineering Laboratory II	2
DDWA 3153	Reinforced Concrete Design	3
DDWA 3332	Hydrology	2
DDWA 3423	Geotechnical Engineering	3
Total		14

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWA 3908	Industrial Training	8
DDWA 3914	Industrial Training Report	4
Total		12
Total Credits		94

SYNOPSIS OF CORE COURSES

DIPLOMA IN CIVIL ENGINEERING

DDWA 1013: Civil Engineering Drawing

This course is designed to expose the students to a basic understanding of technical and engineering drawings. It will cover the aspect of understanding and interpretation of the element of drawings. The concept of orthographic and isometric projection will be discussed and applied in the hands-on session with Computer Aided Drawing (CAD). Students will also be exposed to the civil works drawings, i.e., the reinforced concrete detailing and structural steel detailing drawings. During this session, students will be asked to draw and submit group projects that are given to them. After completing this course students should be able to produce civil engineering drawings using CAD.

DDWA 1022: Contract and Estimation

This subject consists of an introduction to civil engineering construction industry, the definition of contract and its importance, the relationship between tender and contractor, types of contract, contract management, tender and document tender, tender forms, types of tender and tender advertisement, Moreover, it also covers construction estimation processes, methods of estimation, construction costs and bill of quantities.

DDWA 1212: Civil Engineering Materials

This course is designed for students to understand the different types of construction materials in civil engineering. It will emphasize on types and functions of cement, the function of aggregates in concrete, water, admixture, properties of fresh and hardened concrete, concrete mix design, manufacturing concrete on-site, properties and application of timber, types and characteristics of brick and block, ferrous and non-ferrous metal and other latest materials in the construction industry.

DDWA 1093: Engineering Surveying

This course introduces the basic knowledge of surveying and mapping, survey regulation, role of JUPEM and License Surveyors. Plans and maps: types, components, design and plotting method. Leveling: techniques and its application in civil engineering projects. Principle and method of basic surveying: angle, bearing and distance. Traverse surveying: types, application, computation and adjustment. Detail survey: Technique of measurement, booking, computations and plan drawing. Concept of the field to finish in surveying and its application in civil engineering projects. Introduction and calculating various types of road curve: simple curve, transition curve and vertical curve. It also covers the various calculating areas: rectilinear, irregular and from coordinate. It will also cover calculating volumes: from cross-sections, from spot heights and from contour lines. Mass-haul diagrams will also be covered in this course.

DDWA 1113: Engineering Mechanics

This course presents the introduction to force, vector, resultant, moment & couple, 2-D and 3-D equilibrium of particle and rigid body, friction, center of mass/weight, centroid, moment of inertia and kinematics, kinetics and work energy & power.

DDWH 1102: Mechanical and Electrical System

This course introduces students to electrical and mechanical systems. The mechanical part consists of the air conditioning and ventilation, water supply and drainage, lift/elevator and escalator, fire safety and control system. For electrical system consists of the DC and AC circuit, electrical wiring drawing, electrical accessories and cable, wiring system.

DDWA 1082: Introduction to Civil Engineering

This course is offered in the 1st semester to all new students of Civil Engineering Programmed. The course includes a general introduction to the field of civil engineering and the technician's responsibilities to society. Main subfields in the discipline such as Structural Engineering, Transportation and Geotechnical Engineering, Hydraulics and Hydrology and Environmental Engineering will be highlighted by the experts of the respective subfields. The course also exposes the students to generic skills related to engineering practices such as team working, making ethical decisions and communication skills through the lectures and group projects. Before the weekly lectures and presentations, a special welcoming lecture will be given by the Chair of the School.

DDWA 2123: Mechanics of Materials and Structures

Students are introduced to the basic concept and calculations of stresses and strains arising from a combination of load applications – axial, shear and bending. Examines strains that occur in elastic bodies subjected to direct and combined stresses, shear and bending moment diagrams: Stresses in beams deflection of beams; analyze columns.

DDWA 2313: Fluid Mechanics

This subject consists of properties of fluids; fluids in equilibrium; basic equations in fluid mechanics: continuity equation, Bernoulli's theorem, momentum principle and Pascal's law; analysis of pipe flow; and analysis of flow in a pipeline.

DDWA 2413: Soil Mechanics

This subject is intended to present the principles of Soil Mechanics and its application to foundation analysis. It will provide an understanding of the properties and behavior of soils. The subject will cover geology and formation of natural soil deposits, basic physical properties of soils, classification of soils, water in soils, effective stress in soils and shear strength of soils. The fundamental principles and guidance given in the subject will be a base for lifelong learning in the science and art of geotechnical engineering.

DDWA 2032: Civil Engineering Construction

This course is to highlight the construction activities involved: Introduction to substructure: foundation and piles. Introduction to temporary works: scaffolds and formworks. Introduction to superstructure: Floors, Walls, Internal Fixtures and Fittings and Roofs with different materials.

DDWA 2133: Structural Steel Design

This course presents the design of steel structural elements such as beam, truss and purlins, tension and compression members, column and connections.

DDWA 2043: Project Management and Construction Practice

The subject is for students to understand the basic principles and techniques of project management. It covers the basic functions and purpose of project management. It also covers a basic introduction to the construction process, project scheduling, project planning and control, project coordination and administration. Finally, basic introduction to the construction quality, health and safety management. Students will be working on a real project using techniques and tools learned in project management.

DDWA 2433: Highway and Traffic Engineering

This is a core subject for the civil engineering course. The subject focuses on the development of knowledge, understand and identify the highway engineering works in construction and traffic study. Topics include road materials, highways construction, pavement design, road drainage, road maintenance, traffic analysis, traffic control device, geometric design, road statistics and economy. Assignments and group projects related to various civil engineering fields are given to the students.

DDWA 2062: Civil Engineering Laboratory I

This subject is compulsory to the final year students of civil engineering courses, which is a combination of four (4) laboratories. The labs involved are Concrete Laboratory, Structure and Material Laboratory, Fluid Laboratory and Soil Laboratory. Students must undergo each lab session to fulfill the requirements for this subject. This laboratory subject is put in place with the related subjects to enhance students understanding upon completing the course.

DDWA 2072: Civil Engineering Laboratory II

This subject is compulsory to the final year students of civil engineering courses, which is a combination of five (5) labs. The labs involved are Highway & Traffic Laboratory, Structure and Material Laboratory, Hydraulic Laboratory, Environment Laboratory and Geotechnics Laboratory. Students must undergo each lab session to fulfill the requirements for this subject. This laboratory subject is put in place with the related subjects to enhance students understanding upon completing the course.

DDWA 2513: Environmental Engineering

This course introduces students to the discipline and the major fields of environmental engineering. It discusses issues of development and pollution, effects of pollution, pollution control technology including environmental laws and regulations. This course provides the students the fundamental knowledge of environmental engineering principles including environmental chemistry and biology. It emphasizes on theory, design and practices of the collection and treatment of water and wastewater including water distribution systems and wastewater disposal. The fundamentals of solid waste management covering operational activities of collection and disposal will also be discussed.

DDWA 2323: Hydraulics

This course consists of uniform flow in open channel: Manning's equation and Chezy's equation; non-uniform flow in open channel: critical depth, subcritical flow, supercritical flow, hydraulic jump, gradually varied flow; centrifugal pump; and Hardy Cross method for pipe network

DDWA 2143: Theory of Structures

This course presents different types of structures and degrees of determinacy, calculating reactions and internal forces (axial, shear and bending) for indeterminate structures and their components, constructing influence lines for statically determinate beams, plastic analysing of beams and frames by virtual method and calculating reactions for arches and cables.

DDWA 3153: Reinforced Concrete Design

This course presents the introduction to the design of reinforced concrete structural elements such as beam, slab, column and footing.

DDWA 3423: Geotechnical Engineering

This is a study of basic principles of soil and its application to foundation analysis. The course will provide an understanding of the properties and behavior of soils and exposure towards practical Geotechnical Engineering. The course will cover soil compaction and stabilization, stress distribution in soil, lateral earth pressure, compressibility and consolidation of soil, slope stability, shallow foundation and site investigation. The topics that will be covered in the course are important to civil engineers where most problems that occur at the site will involve geotechnical and soil mechanics.

DDWA 3332: Hydrology

This course consists of the basic concept of hydrology related to the hydrological cycle. Measurement and analysis of precipitation data including calculation of mean precipitation and Double Mass Curve. Surface runoff and peak discharge calculation for civil works related to water, streamflow measurement and hydrograph. Drainage design including Rational Method, Modified Rational Method and peak discharge forecasting (Gumbel's Extreme Value).

DDWA 3054: Final Year Project

Civil engineering final year project requires the understanding of Civil engineering core courses. A project-based approach will be used in the project implementation which must be done individually. The topic will be proposed by students. They must submit a project proposal plan consist of project selection, project planning, literature review, work of theoretical, experimental, or computing nature leading to the achievement of objective and preparation of project report.

DDWA 3908: Industrial Training

This course requires the students to apply all technical and soft skills knowledge that has been thought throughout the study years. The students will be exposed to the real working environment and practice their Graduate Success Attributes to solve real problems.

DDWA 3914: Industrial Training Report

The student will learn how to write a proper industrial training report in accordance with the standard set by civil engineering department.

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Electronics Engineering		
2. Final Award		Diploma in Electronics Engineering		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Engineering Technology Accreditation Council (ETAC)		
6. Code of Programme		DDWE		
7. Language(s) of Instruction		Bahasa Melayu and/or English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full-time		
11. Study Duration		Full Time : Minimum : (3 Years) Maximum : (4 ½ Years) Part Time : Minimum : (4 Years) Maximum : (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	15
Short	0	3	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of THREE (3) credits (GRADE C) inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects in Science / Technical / Vocational Institution

AND

Obtained a pass (GRADE E) in English and Additional Mathematics

AND

Not having colour blindness or any disabilities which may hinder practical work

OR

Obtained qualification from Technical / Vocational / Skill Institution or equivalent which, relevant and recognized with credit.

- Bahasa Melayu SVM Code 1104 AND Academic CGPA ≥ 3.33 AND Vocational CGPA ≥ 3.67

	<p style="text-align: center;"><u>OR</u></p> <p>Passed in Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / recognized Certificate which is equivalent and related with the Diploma Programme applied by the student AND obtains a minimum cumulative grade point average (CGPA) of 2.00.</p> <p style="text-align: center;"><u>OR</u></p> <p>Matriculation Certificate (Science Stream and Engineering) by obtaining a minimum cumulative grade point average (CGPA) of 2.00.</p> <p style="text-align: center;"><u>OR</u></p> <p>Passed O-Level with a minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of Science subjects</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> • <i>Candidates for Diploma in Engineering must not be colour blindness except for Diploma in Civil Engineering.</i> • <i>Candidates who are admitted with Certificate without credits in Mathematics at the SPM or equivalent can be admitted IF the Mathematics subject offered is equivalent to the SPM level.</i>
<p>13. Programme objectives:</p> <p>Programme Educational Objectives Graduates of Diploma in Electronics Engineering, will achieve the followings objectives:</p> <ol style="list-style-type: none"> i. Competent, creative and innovative in solving various problems in the field of Electronics Engineering. ii. Communicate effectively with leadership skill and self-confidence while striving for career advancement through life-long learning. iii. Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities 	

14. Programme Learning Outcomes (PLO)			
Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge	Apply knowledge of applied mathematics and science, engineering fundamentals and electronics engineering principles to wide practical procedures and practices.	Lectures, tutorials, industrial training, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Project, Presentation and Industrial training report
PLO2 Problem Analysis	Identify and analyses electronics engineering problems that lead to substantial conclusions using specific method of analysis.	Project based learning, active and cooperative learning, case studies, problem based learning.	Test, Assignment, Project and Project report.
PLO3 Design/development of solutions	Design solution for technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.	Project based learning, active and cooperative learning, case studies, problem based learning.	Test, Assignment, Report and project report.
PLO4 Investigation	Conduct investigation of well-defined problems, locate and search relevant references, conduct standard tests and measurements.	Laboratory work, Industrial training, project and group projects.	Assignment, Report, Log book, Laboratory works and Project report.

<p align="center">PLO5 Modern Tool Usage</p>	<p>Apply computational techniques, resources, and modern engineering and IT tools to solve engineering problems with an understanding of the limitations.</p>	<p>Laboratory work, active and cooperative learning Industrial training, project and group projects</p>	<p>Assignment, Laboratory reports, Industrial training report, Project report.</p>
<p align="center">PLO6 The Engineer and Society</p>	<p>Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the responsibilities relevant to the technician practice and solutions to engineering problems.</p>	<p>Lecture, Assignments, Projects, Industrial training and laboratory works.</p>	<p>Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report.</p>
<p align="center">PLO7 Environment and Sustainability</p>	<p>Explain and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts</p>	<p>Lecture, Assignments, Projects, Industrial training and laboratory works.</p>	<p>Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report</p>
<p align="center">PLO8 Ethics</p>	<p>Apply ethical principles and commit to professional ethics and responsibilities and norms of technician practice with integrity.</p>	<p>Lecture, Assignments, Projects, Industrial training and laboratory works.</p>	<p>Assignment, Project and Industrial training report</p>
<p align="center">PLO9 Individual and Team Work</p>	<p>Work independently, and as a member or a leader in team to manage project in a diverse technical team towards achieving common goal.</p>	<p>Assignments, Projects, Industrial training, cooperative learning and discussion.</p>	<p>Project/assignment reports, Industrial training report and Presentations.</p>

<p style="text-align: center;">PLO10 Communications</p>	<p>Communicate effectively through written and oral mode and collaborate in managing team relationships in the engineering community and all levels of society.</p>	<p>Assignments, cooperative learning, Laboratory report Industrial training and projects</p>	<p>Assignment, Project report, Industrial training report, Laboratory report and Presentations.</p>
<p style="text-align: center;">PLO11 Project Management and Finance</p>	<p>Demonstrate knowledge and apply engineering management principles and entrepreneur culture to manage projects/ activities in multi-disciplinary environments.</p>	<p>Assignment, Projects, directed reading, internet searching, lectures, active and cooperative learning.</p>	<p>Project report and Assignment reports.</p>
<p style="text-align: center;">PLO12 Life Long Learning</p>	<p>Recognize the need for and engage in independent and life-long learning with digital applications and complex numerical and graphical/visual data.</p>	<p>Assignment, Projects, Industrial training directed reading, cooperative learning and discussion.</p>	<p>Project report, Log book, assignment reports and Industrial training report.</p>
<p>15. Total credit hours to graduate</p>		<p style="text-align: center;">93 credit hours</p>	
<p>16. Programme structures and features, curriculum and award requirements</p>			
<p>This programme is offered on full-time based on a 2 Semester Academic Session with several subjects being delivered and assessed in each semester. Assessment is based on coursework, project and final examination.</p> <p>Assessment:(Refer to UTM Academic Regulations)</p> <p>i. Lecture based course: Final examinations (not less than 40%) Coursework.</p> <p>ii. Skill-based course: 100% Coursework.</p> <p>Award requirements: Students should achieve a total of 93 credit hours with minimum CPA of 2.00.</p>			

17. Our uniqueness

Diploma in Electronics Engineering the student will go through four (4) months of Industrial Training with established electronic engineering firm or government sector in order to expose them with real working experience as an Assistant Electronic engineer. Also, the students to gain additional qualifications, broaden their knowledge in order to qualify for entry into undergraduate programme, or undertake professional development for a range of purposes.

18. Career Prospects

Diploma in Electronic Engineering holder can work as an assistant engineer or technical assistant in electronics or electrical engineering industry or any engineering industry or further studies for a Bachelor degree at local or foreign universities.

19. UTM Diploma ++ Programme

Students are given the opportunity to enroll in short courses offered by university that are relevant to the engineering field during their studies.

20. Facilities Available

List of Laboratories:

- a. Electrical Workshop
- b. Electrotechnics Laboratory
- c. PCB Laboratory
- d. Circuit Theory Laboratory
- e. Communication Laboratory
- f. Instrumentation Laboratory
- g. Measurement Laboratory
- h. Programmable Logic Controller (PLC) Laboratory
- i. Digital Laboratory
- j. Analog Laboratory
- k. Electrical Technology Laboratory
- l. Systems Laboratory.
- m. Microprocessor Laboratory
- n. Industrial Automation and Robotics Laboratory
- o. Electronics Workshop

21. Support for Students and Their Learning

Personal support

Academic Advisor
Counseling

Infrastructure support

Internet access
e-learning
Digital library
Health care and Recreational

Financial support

Perbadanan Tabung Pendidikan Tinggi Negara (PTPTN)
Jabatan Perkhidmatan Awam (JPA)
Yayasan Negeri
Pusat Zakat Negeri
MARA

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
DDWE 1152	Introduction to Electrical Engineering	2
ULRS 1012	Value and Identity	2
UHLB 1032	Introductory Academic English	2
DDWS 1112	Engineering Mathematics 1	2
DDWE 1203	Circuit and System 1	3
DDWE 1123	Digital Electronics	3
DDWE 1702	Electrical and Electronics Workshop	2
Total		16

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS 1182	Appreciation for Ethics and Civilization	2
UHLB 1042	Intermediate Academic English	2
DDWS 1122	Engineering Mathematics 2	2
DDWS 1713	Physics	3
DDWE 1213	Circuit and System 2	3
DDWE 1133	Instrumentation and measurement	3
DDWE 1711	Electrical Engineering Laboratory 1	1
Total		16

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULRF 2**2	Service Learning & Community Engagement Courses	2
DDWE 2043	Differential Equations	3
DDWE 2813	Programmable Logic Controller	3
DDWE 2012	Professional Engineering Ethics Code	2
DDWE 2203	Electronic Devices and Circuit 1	3
DDWH 2213	Electrical Engineering System	3
Total		16

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWE 2213	Electronics Devices and Circuit 2	3
DDWE 2142	Industrial Automation	2
DDWE 2803	Microprocessor	3
DDWE 2503	Digital Interfacing	3
DDWE 2103	Network and System	3
DDWE 2701	Electrical Engineering Laboratory 2	1
Total		15

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWE 3704	Project	4
DDWE 3513	Electronics Manufacturing Process	3
DDWE 3103	Programming	3
DDWE 3523	Industrial Electronics	3
DDWE 2112	Engineering Management	2
DDWE 3711	Electronic Engineering laboratory	1
	Total	16

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWE 3908	Industrial Training	8
DDWE 3914	Industrial Training Report	4
	Total	12
	Total Credits	91

**PRE-REQUISITE
DIPLOMA IN ELECTRONICS ENGINEERING**

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6
DDWS 1112	DDWS 1122	DDWE 2043			
			DDWH 2213		
DDWE 1203	DDWE 1213		DDWE 2103		

* Pre-requisite at least D+

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Electrical Engineering		
2. Final Award		Diploma in Electrical Engineering		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Engineering Technology Accreditation Council (ETAC)		
6. Code of Programme		DDWH		
7. Language(s) of Instruction		Bahasa Melayu and/ or English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full-time		
11. Study Duration		Full Time : Minimum : (3 Years) Maximum : (4 ½ Years) Part Time : Minimum : (4 Years) Maximum : (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	15
Short	0	3	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of THREE (3) credits (GRADE C) inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects in Science / Technical / Vocational Institution

AND

Obtained a pass (GRADE E) in English and Additional Mathematics

AND

Not having colour blindness or any disabilities which may hinder practical work

OR

Obtained qualification from Technical / Vocational / Skill Institution or equivalent which, relevant and recognized with credit.

- Bahasa Melayu SVM Code 1104 AND Academic CGPA ≥ 3.33 AND Vocational CGPA ≥ 3.67

	<p style="text-align: center;"><u>OR</u></p> <p>Passed in Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / recognized Certificate which is equivalent and related with the Diploma Programme applied by the student AND obtains a minimum cumulative grade point average (CGPA) of 2.00.</p> <p style="text-align: center;"><u>OR</u></p> <p>Matriculation Certificate (Science Stream and Engineering) by obtaining a minimum cumulative grade point average (CGPA) of 2.00.</p> <p style="text-align: center;"><u>OR</u></p> <p>Passed O-Level with a minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of Science subjects</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> • <i>Candidates for Diploma in Engineering must not be colour blindness except for Diploma in Civil Engineering.</i> • <i>Candidates who are admitted with Certificate without credits in Mathematics at the SPM or equivalent can be admitted IF the Mathematics subject offered is equivalent to the SPM level.</i>
--	---

13. Programme objectives:

Programme Educational Objectives Graduates of Diploma in Electronic Engineering, will achieve the followings objectives

- a) Competent, creative and innovative in solving various problems in Electrical Engineering field.
- b) Communicate effectively with leadership skill and self-confidence while striving for career advancement through life-long learning.
- c) Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities.

14. Programme Learning Outcomes (PLO)			
Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge	Apply knowledge of mathematics, applied science, engineering fundamentals and electrical engineering principles to practical procedures and practices	Lecture, tutorial, industrial training, directed reading, internet searching, active and cooperative learning.	Test, quiz, Examination, Assignment report, Presentation, lab report and Industrial training report
PLO2 Problem Analysis	Identify and analyse electrical engineering problems that lead to substantial conclusions using specific method of analysis	Project-based learning, active and cooperative learning, case study, problem-based learning.	Test, Assignment report and Project report.
PLO3 Design/development of solutions	Design solutions for technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations	Project-based learning, active and cooperative learning, case study, problem-based learning.	Test, Assignment report and Project report.
PLO4 Investigation	Conduct investigation of well-defined problems, locate and search relevant references, conduct standard tests and measurements	Laboratory work, Industrial training, final year project and a group project.	Assignment report, Log book, and Project report.
PLO5 Modern Tool Usage	Apply computational techniques, resources, and modern engineering and IT tools to solve engineering problems with an understanding of the limitations	Laboratory work, Industrial training, project and group project.	Laboratory report, Supervisory Evaluation, Project report.

<p align="center">PLO6 The Engineer and Society</p>	<p>Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the responsibilities relevant to the technician practice and solutions to engineering problems</p>	<p>Lecture, Assignment, Project, Industrial training and laboratory work.</p>	<p>Test, quiz, Examination, Assignment report, Presentation and Supervisory Evaluation</p>
<p align="center">PLO7 Environment and Sustainability</p>	<p>Explain and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems innovatively in societal and environmental contexts</p>	<p>Lecture, Assignment, Project, Industrial training and laboratory work.</p>	<p>Test, quiz, Examinations, Assignments report, Presentation and Industrial training report</p>
<p align="center">PLO8 Ethics</p>	<p>Apply ethical principles and commit to professional ethics and responsibilities and norms of technician practice with integrity</p>	<p>Active learning, Assignment, Project, Industrial training and laboratory work.</p>	<p>Assignment report, Project, Industrial training report and ethical values assessment</p>
<p align="center">PLO9 Individual and Team Work</p>	<p>Work independently, and as a member or a leader in a team to manage project in a diverse technical teams towards achieving common goal</p>	<p>Assignment, Project, Industrial training, cooperative learning and discussion.</p>	<p>Project/assignment report, peer assessment, Industrial training report and Presentation.</p>
<p align="center">PLO10 Communications</p>	<p>Communicate effectively through written and oral mode and collaborate in managing team relationships in the engineering community and all levels of society</p>	<p>Assignment, laboratory work, Industrial training, cooperative learning and project</p>	<p>Assignment report, laboratory report, Project report, Industrial training report and Presentation.</p>

<p align="center">PLO11 Project Management and Finance</p>	<p>Demonstrate knowledge and apply engineering management principles and entrepreneur culture to manage projects/activities in multidisciplinary environments</p>	<p>Assignment, Project, Industrial Training, directed reading, internet searching, lecture, active and cooperative learning.</p>	<p>Project report, Industrial training report and Assignment report</p>
<p align="center">PLO12 Life Long Learning</p>	<p>Recognise the need for and engage in independent and life-long learning with digital applications and complex numerical and graphical/visual data</p>	<p>Assignment, Project, Industrial training directed reading, active learning and discussion.</p>	<p>Project report, Log book, assignment report and Industrial training report</p>
<p>15. Total credit hours to graduate</p>		<p align="center">94 credit hours</p>	
<p>16. Programme structures and features, curriculum and award requirements</p>			
<p>This programme is offered on full-time based on a 2 Semester Academic Session with several subjects being delivered and assessed in each semester. Assessment is based on coursework, project and final examination.</p> <p>Assessment:(Refer to UTM Academic Regulations)</p> <ul style="list-style-type: none"> i. Lecture-based course: Final examinations (not less than 40%) Coursework. ii. Skill-based course: 100% Coursework. <p>Award requirements: Students should achieve a total of 94 credit hours with a minimum CPA of 2.00</p>			

17. Our uniqueness

Diploma in Electrical Engineering the student will go through four (4) months of Industrial Training with established electrical power engineering firm or government sector to expose them with real working experience as an Assistant electrical engineer. Also, the students to gain additional qualifications, broaden their knowledge in order to qualify for entry into undergraduate, or undertake professional development for a range of purposes.

18. Career Prospects

Diploma in Electrical Engineering holder can work as an assistant engineer or technical assistant in electrical or electronics engineering industry or any engineering industry or further studies for a Bachelor degree at local or foreign universities.

19. UTM Diploma ++ Programme

Students are given the opportunity to enroll in short courses offered by university that are relevant to the engineering field during their studies.

20. Facilities Available

List of Laboratories:

- a. Electrical Workshop
- b. Electrotechnics Laboratory
- c. PCB Laboratory
- d. Circuit Theory Laboratory
- e. Communication Laboratory
- f. Instrumentation Laboratory
- g. Measurement Laboratory
- h. Programmable Logic Controller (PLC) Laboratory
- i. Digital Laboratory
- j. Electronic Workshop
- k. Analog Laboratory
- l. Electrical Technology Laboratory
- m. Systems Laboratory.
- n. Microprocessor Laboratory
- o. Industrial Automation and Robotics Laboratory
- p. Electrical Machine Laboratory

21. Support for Students and Their Learning

Personal support

Academic Advisor

Counseling

Infrastructure support

Internet access

e-learning

Digital library

Health care and Recreational

Financial support

Perbadanan Tabung Pendidikan Tinggi Negara (PTPTN)

Jabatan Perkhidmatan Awam (JPA)

Yayasan Negeri

Pusat Zakat Negeri

MARA

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS 1182	Appreciation for Ethics and Civilization	2
UHLB 1032	Introductory Academic English	2
DDWS 1112	Engineering Mathematics 1	2
DDWE 1152	Introduction to Electrical Engineering	2
DDWE 1203	Circuit and System 1	3
DDWE 1123	Digital Electronics	3
DDWE 1702	Electrical and Electronics Workshop	2
Total		16

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS 1012	Value and Identity	2
UHLB 1042	Intermediate Academic English	2
DDWS 1122	Engineering Mathematics 2	2
DDWS 1713	Physics	3
DDWE 1213	Circuit and System 2	3
DDWE 1133	Instrumentation and Measurement	3
DDWE 1711	Electrical Engineering Laboratory 1	1
Total		16

YEAR 2 (SEMESTER 3)

Code	Course	Credit
DDWE 2043	Differential Equations	3
DDWE 2012	Professional Engineering Ethics Code	2
DDWE 2812	Programmable Logic Controller	2
DDWE 2203	Electronics Devices and Circuit 1	3
DDWH 2213	Electrical Engineering System	3
DDWE 2112	Engineering Management	2
	Total	15

YEAR 2 (SEMESTER 4)

Code	Course	Credit
ULRF 2**2	Service Learning & Community Engagement Course	2
DDWE 2213	Electronics Devices and Circuit 2	3
DDWE 2142	Industrial Automation	2
DDWE 2803	Microprocessor	3
DDWE 2103	Network and System	3
DDWE 2701	Electrical Engineering Laboratory 2	1
DDWH 2103	Electrical Installation Work	3
	Total	17

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWE 3103	Programming	3
DDWH 3704	Project	4
DDWH 3103	Electrical Machine	3
DDWH 3113	Electrical Power System	3
DDWH 3721	Electrical Engineering Laboratory 3	1
DDWE 3132	Control System	2
	Total	16

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWH 3908	Industrial Training	8
DDWH 3914	Industrial Training Report	4
	Total	12
	Total Credits	92

**PRE-REQUISITE
DIPLOMA IN ELECTRICAL ENGINEERING**

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6
DDWS 1112	DDWS 1122	DDWE 2043			
			DDWH 2213		
DDWE 1203	DDWE 1213		DDWE 2103		

*** Pre-requisite at least D+**

SYNOPSIS OF CORE COURSES

DIPLOMA IN ELECTRONICS ENGINEERING

DIPLOMA IN ELECTRICAL ENGINEERING

DDWE 3103: Programming

The course is designed to expose the engineering students to the basics of computers including hardware and software; practice software development methods and develop students' skills in constructing C language for solving a given problem. It will also emphasize on the practicing of problem design by using algorithm such as flowcharts and pseudo code. For the C programming, it will cover data types, operators, simple functions, selection structures, repetition structures and top-design with functions. At the end of the course, students should be able to create C programming to solve an assigned problem by applying the C knowledge. Introduce other software development programming

DDWE 1203: Circuit and System 1

This course is designed to introduce students to the basic laws, theorems and methods of analysis for solving problems in Direct Current (DC) circuits. Laws, theorems and analysis methods that will be covered in series, parallel and series-parallel circuits include Ohm's Law, Kirchhoff Voltage and Current law, Thevenin's and Norton's theorems, mesh and nodal analysis. At the end of the course, students are expected to be able to solve variables in any given DC electric circuits using the above mention methods. The students will also use suitable software to simulate DC electric circuits and verify calculations.

DDWE 1702: Electrical and Electronics Workshop

This course is compulsory for the first year students, which is a combination of two (2) laboratories. The lab involves are electrical workshops and electronic workshops. Students must undergo each lab session to fulfill the requirements for this course. This course exposes students to be more hands-on.

DDWE 1133: Instrumentation and Measurement

This course introduces students to some of the metrological terminologies used in experimental methods, the concept of error and its application. The course will also provide an understanding of the concept of electrical measurement quantity using analogue and digital instruments. Besides that, this course also introduces signal conditioning circuits. To highlight the fundamental principle of transducers, transducer operations, characteristics and functions will be discussed. Finally the interfaces of the instruments and also the quality of the signals acquired are introduced.

DDWE 1123: Digital Electronics

Digital Electronics covers topics of introduction to digital concept and technology, numbers system, operations and codes, logic gates, Boolean algebra and combinational logic circuit, logic simplification and designing a combinational logic circuit, combinational circuits building blocks, flip-flop, integrated circuit technologies and simulation using suitable simulation tools such as Electronic Workbench

DDWE 1152: Introduction of Electrical Engineering

This course is a general introduction to electrical engineering program offered by the Department of Electrical Engineering, Universiti Teknologi Malaysia (UTM). In this course, students will be exposed to the attributes of an electrical engineer from both academic and practical points of view. Some skills and knowledge that are necessary in the engineering world will be introduced here. Students will obtain a clearer overview of the benefits, excitements and challenges of being an electrical engineering student and a professional electrical engineer in the near future. Further, students shall identify, discuss and analyze critically contemporary issues affecting earth.

DDWE 1213: Circuit and System 2 (Pre-requisite DDWE 1203)

This course introduces students to the basic laws, rules, theorems and methods of alternating current (AC) circuits analysis such as Ohm's law, Kirchhoff's current and voltage laws, mesh and nodal analysis, superposition theorem, source transformation, Thevenin's and Norton's theorems and maximum power transfer theorem. The course also provides a basic understanding of operational amplifiers (op-amp) and how nodal analysis can be applied to various types of op-amp circuits. The students are also expected to be able to perform AC circuit simulations using suitable software.

DDWE 1711: Electrical Engineering Laboratory 1

This course involves three (3) different laboratories to run experiments related to Circuit and System 1, Instrumentation and measurement and Electronic digital. The laboratory involves **Circuit and System 1** laboratory is series circuit, Parallel and series parallel and capacitor. In **Instrumentation and Measurement** laboratory: analogue meter and error calculating, multimeter and voltage control oscillator and oscilloscope and function generator experimental. In **Digital Electronics laboratory**: The Logic Level and Verification Of Logic Gates, Verification And Implementation Of Boolean And De morgan's Theorems, counter & register experimental. At the end of this course, students should be able to discuss experimental results obtained, give creative comments and conclusion and able to write a short report on the experiments done in the laboratory

DDWE 2203: Electronics Devices and Circuit 1

This course consists of introduction to semiconductor devices such as diodes and transistors. Introduction to semiconductor diodes, semiconductor materials, formation of the diode, symbol and characteristics, specification sheet and diode identification. Introduction to zener, LED and photo diodes. Analysis and applications of diodes, dc circuits and load line, ac circuits, rectifiers, clippers and clampers. Application of Zener diode. Introduction to Bipolar Junction Transistor (BJT) and Field Effect Transistor (FET), construction, operation, symbol, configuration, characteristics, limits of operation, specification sheet, casing, terminal identification and biasing circuits. Application of transistor as switches

DDWE 2701: Electrical Engineering Laboratory 2

This course involves four (4) different laboratories to run experiments related to Instrumentation, Electrical Technology, Circuit Theory and Electronics 1. The laboratory in **Instrumentation** is Strain Gauge, Pressure Gauge and Thermocouple. The laboratory involves are **Electrical Technology laboratory** provides three experiments such as single phase transformer testing, power factor correction and DC generator separately excitation experimental. **Circuit and Device laboratory** provides four experiments such as Superposition and Thevenin's theorem, AC circuit analysis, Series RLC and resonance and Two port network experimental. **Electronics 1 laboratory** provide four experiments: Rectifier and clipping circuit, Zener regulator, BJT, DC and AC analysis and Frequency response BJT amplifier experimental. At the end of this course, students should be able to discuss experimental results obtained, give creative comments and conclusions and able to write a short report on the experiments done in the laboratory.

DDWE 2213: Electronics Devices and Circuit 2

This course introduces students to fundamental theories in amplifiers and its application. It will examine some key issues in basic definition and construction of BJT and MOSFET amplifiers with a special focus on AC analysis (small signal equivalent circuits). Introduction to the ideal OP-AMPS properties and related circuits to find voltages and currents as well describing operational amplifier performance and application will be presented. The course will also provide practice in carrying out a computer simulation and modelling of the amplifier's circuit using MultiSim software. At the end of the course, students should be able to recognize and categorize different negative feedback topologies and how they are used to stabilize the gain and alter input and output impedance of an op-amp based amplifier

DDWE 2142: Industrial Automation

Introduce to the students the basic concepts of the automation. Students will be taught on the automation devices, industrial robots, CNC, material handling system, controllers and techniques of automation. At the end of the course, students will be able to develop small automation projects using automation devices such as motor sensors and actuators.

DDWE 3523: Electronic Manufacturing Process

This subject consists of introduction to electronic industry, history of electronic manufacturing and global market for electronic product. Introduction and definitions of electrostatic discharge (ESD), cause of static discharge and ESD

protection equipment. Introduction to printed circuit board (PCB), types of PCB, basic process, base materials, laminating process, pressing and quality control. Fabrication of PCB, the process of subtractive, additive and semi-additive, fabrication, image transfer, plating, etching, bare-board testing, design and layout. Assembly techniques for through-hole (TH) component and surface-mount (SM) component. Introduction to soldering process, soldering materials, soldering flux, soldering techniques, post solder cleaning. Introduction to the testability of product, testing objective, testing techniques and procedures, types of product testing. The students are expected to be able going to industrial visit for case study

DDWE 2803: Microprocessor

The course introduces the engineering students to the basic of microprocessor and microcontroller system including hardware and software. Various essential topics of the 8051-based microprocessors/microcontrollers including architecture, programming and interfacing. Hardware topics include microprocessor/microcontroller and its concept, basic configurations of microprocessor/microcontroller-based system, supporting components, assembling a basic system, and interfacing with input/output devices. Software topics cover assembly language programming structure, addressing modes, instructions set, stacks, subroutines and index; and microprocessor specific features, interrupts, and timers

DDWE 2012: Professional Engineering Ethics Code

This course introduces and exposes the students to the concepts, theories and the practice of Professional Engineer. It highlights to the students profession of engineering, relevant acts and regulations, engineering code of ethics, engineers' roles and responsibilities, engineering ethics, the impact of the work of an engineer on society, and knowledge to cater the needs for sustainable development. Also, students get knowledge of accreditation of the needs for sustainable development. Based on this knowledge, the students will work on cases to analyze real engineering issues and cases in groups

DDWH 2213: Electrical Engineering System

The course introduces electromagnetic induction and principles related to generation of alternating current (ac) and direct current (dc). The course also includes magnetic circuits, single-phase and three-phase systems. Other topics covered are single phase transformers and direct current machines that emphasized their constructional features, operating principles and performance analysis.

DDWE 2103: Network and Systems
(Pre-requisite DDWE 1213)

Students are exposed to the steady-state electrical circuit for DC analysis. The relevant concepts in transient circuit analysis for first and second order circuits are taught to the student. The course will also equip the students with necessary knowledge related to frequency response, the application of the Laplace transforms in circuit analysis and the analysis of two-port networks. At the end of the course, the student should be able to apply the theorems and concepts in order to solve and analyse engineering related problems in any given linear electric circuit. They will also act ethically in making decisions and interactions in completing their assignments.

DDWE 2112: Engineering Management

This course is designed to expose students to the basic concepts of management functions in the organization such as planning, organizing, leading and controlling. Besides that, It will emphasize on the management with a scientific approach to solve management problems such as decision analysis application, linear programming, transportation and shipment model, project evaluation & review technique (PERT) and critical path method (CPM), and inventory management.

DDWE 3704: Project

Electronics Engineering final year project requires the understanding of electronics and electrical core courses. Project-based approach will be used in the project implementation which can be done in groups of 2 to 4 students. The topic will be proposed by students. They must submit a project proposal plan consist of project selection, project planning, literature review, work of theoretical, experimental, or computing nature leading to achievement of objective and preparation of project report.

DDWE 3711: Electronic Engineering Laboratory

This course involves four (4) different laboratories to run experiments related to the Electronics 2, Industrial Automation, Digital Interfacing and Industrial Electronics courses. The laboratory involves in **Electronic 2 laboratory**: BJT and FET ac analysis, Frequency Response BJT, Operational Amplifier. **Industrial Automation laboratory** provides three experiments such as feeding and extracting modules, conveyor system (with sensor) modules and handling system with roller conveyor modules. **Digital Interfacing laboratory** provides two experiments such as Memory, Digital to Analogue and Analogue to Digital Converter. **Industrial Electronics laboratory** provides three experiments such as voltage regulator, Oscillator and a stable multivibrator and SCR phase control circuits. At the end of this course, students should be able to discuss experimental results obtained, do analysis and conclusion and able to write a short report on the experiments done in the laboratory.

DDWE 3523: Industrial Electronics

The course covers topics on: Power Supplies: Unregulated and Regulated Power Supplies Circuits – Discrete components and Integrated Circuits (ICs). Wave Generating Circuits: Oscillators (Sine Wave), Square Wave and Triangular Wave Generators. Thyristors: Silicon Controlled-Rectifiers (SCR), Triacs, Diacs and its Application in Power Control Circuits. Power Control switching circuits: Uni-Junction transistors (UJT) and Programmable UJT (PUT). Electronics and Mechanical Control Switching Circuits: Opto - Electronics, Mechanical Switches and Relays.

DDWE 2503: Digital Interfacing

The course outline has been divided into two blocks of study where the basis is mutually related in theoretical and application. These are machine memory concepts and interfacing systems. The syllabus comprises of introduction to computer concepts that cover basic components or sub-systems where the expression is given to the machine memory system conceptual and development understanding. This includes the study of various categories of machine memory technologies where great attention will be given to electronic-based, magnetic-based and optical-based memory technologies. In the second block of study, the interfacing system covers the main three categories of interfacing systems that practice in the current market. These involve the user interface, software interface and hardware interface. Special attention will be given to the hardware mechanism of the interfacing operation involving the basic analogue-to-digital and digital-to-analogue circuitry. The course is completed with an overview of digital signal processing with the aim of presenting the students to the various digital signals and image processing and application concerning the market and demand trend.

DDWE 3908: Industrial Training

This course requires the students to apply all technical and soft skills knowledge that has been taught throughout the study years. The students will be exposed to the real working environment and practicing their communication skills to solve real problems.

DDWE 3914: Industrial Training Report

This course requires the students to produce a report on the industrial training carried out by them. The report will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or department. After completing the report, the students should be able to present information and express ideas clearly, effectively and confidently.

DDWH 2103: Electrical Installation Work

This course introduces students to the Wiring regulation IEC 63064 and safety practices in the workplace. Symbols and electrical drawing. Accessories, wiring circuit, cable and conductor. Wiring design for domestic. Earthing system. Lightning protection system. Electrical wiring testing. Tariff and Renewable energy.

DDWH 3103: Electrical Machine

This course introduces students to the basics of three phase machines such as three-phase transformers, three phase synchronous generators and three-phase induction motors. Basically, it consists of the construction and principle of operation, connection, phase shift, classification, standard testing procedures, equivalent circuits, performance, parallel operation, torque characteristic and active power analysis. It also looking at the starting and torque characteristics of single-phase induction motor, universal motor, stepper motor, hysteresis motor, and synchronous motor. Finally, the basic of motor control in the industry which includes the typical control devices, starters and speed control.

DDWH 3113: Electrical Power System

This course is designed to introduce the per-unit modelling of power systems and symmetrical fault analysis. Topics include electrical power generation, symmetrical and unsymmetrical three-phase fault, load flow analysis and control, transmission lines, technical treatment of the general problem of power system stability and its relevance. At the end of the course, students are expected to apply the analysis concept in solving the real power system problems.

DDWH 3704: Project

Electrical Engineering final year project requires the understanding of electrical and electronics core courses. Project-based approach will be used in the project implementation which can be done in groups of 2 to 4 students. The topic will be proposed by students. They must submit a project proposal plan consist of project selection, project planning, literature review, work of theoretical, experimental, or computing nature leading to the achievement of objective and preparation of project report.

DDWE / DDWH 3908: Industrial Training

This course requires the students to apply all technical and soft skills knowledge that has been taught throughout the study years. The students will be exposed to the real working environment and practicing their communication skills to solve real problems.

DDWE / DDWH 3914: Industrial Training Report

This course requires the students to produce a report on the industrial training carried out by them. The report will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or department. After completing the report, the students should be able to present information and express ideas clearly, effectively and confidently.

DDWE 2813: Programmable Logic Controller

This course introduces Programmable Logic Controllers (PLC) including their history, basic operation and general architecture. The student will learn basic interfacing, programming and simple applications of a PLC.

DDWE 3132: Control System

The course introduces different types of electrical machines and their construction as well as their analysis and application. Furthermore, the course regards how machines can be adapted to certain applications using power electronics. This is especially interesting for processes that require control of speed, torque, or position. The student is given a background in device selection and power conditioning circuits that have applications at high power levels.
Topics

DDWH 3721: Electrical Engineering Laboratory 3

This course involves four (4) laboratories to run experiments related to specialized subjects for second and third year students of DDWH programme which cover all the courses of Electrical Machine, Electrical Power System, Electronics 2 and Industrial Automation. The course is designed to give them a better theoretical understanding as well as providing them a hands-on skill. The laboratory involves are: -

Electronic 2 laboratory provides three experiments such as FET, Op-Amp and Power Amplifier experiments.

Industrial Automation laboratory provides four experiments such as feeding and extracting modules, conveyor system modules, operation an industrial robot and handing system with roller conveyor modules experiments.

Electrical Machine Laboratory provides two experiments such as three phase transformer connection and three phase synchronous machine experimental.

Electrical Power System laboratory provides two experiments such as transmission line and voltage regulation and load flow experimental. At the end of this course, students should be able to discuss experimental results obtained, give creative comments and conclusions and able to write a short report on the experiments done in the laboratory

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Mechanical Engineering		
2. Final Award		Diploma in Mechanical Engineering		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Engineering Technology Accreditation Council (ETAC)		
6. Code of Programme		DDWJ		
7. Language(s) of Instruction		Bahasa Melayu and English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full-time and Part Time		
11. Study Duration		Full Time: Minimum : (3 Years) Maximum : (4 ½ Years) Part Time: Minimum : (4 Years) Maximum : (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	15
Short	0	3	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of THREE (3) credits (GRADE C) inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects in Science / Technical / Vocational Institution

AND

Obtained a pass (GRADE E) in English and Additional Mathematics

AND

Not having colour blindness or any disabilities which may hinder practical work

OR

Obtained qualification from Technical / Vocational / Skill Institution or equivalent which, relevant and recognized with credit.

- Bahasa Melayu SVM Code 1104 AND Academic CGPA ≥ 3.33 AND Vocational CGPA ≥ 3.67

OR

Passed in Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / recognized Certificate which is equivalent and related with the Diploma Programme applied by the student AND obtains a minimum cumulative grade point average (CGPA) of 2.00.

OR

Matriculation Certificate (Science Stream and Engineering) by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Passed O-Level with a minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of Science subjects

Note:

- *Candidates for Diploma in Engineering must not be colour blindness except for Diploma in Civil Engineering.*
- *Candidates who are admitted with Certificate without credits in Mathematics at the SPM or equivalent can be admitted IF the Mathematics subject offered is equivalent to the SPM level.*

13. Programme Educational Objectives (PEO)

- Competent, creative and innovative in solving various problems in the field of Mechanical Engineering
- Communicate effectively with leadership skill and self-confidence while striving for career advancement through life-long learning
- Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities

14. Programme Learning Outcomes (PLO)			
Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge	Apply knowledge of applied mathematics and science, engineering fundamentals and mechanical engineering principles to wide practical procedures and practices.	Lectures, tutorials, industrial training, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Project, Presentation and Industrial training report
PLO2 Problem Analysis	Identify and analyse mechanical engineering problems that lead to substantial conclusions using specific method of analysis.	Project based learning, active and cooperative learning, case studies, problem based learning.	Test, Examination, Assignment report and Project report.
PLO3 Design/development of solutions	Design solution for technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.	Project based learning, active and cooperative learning, case studies, problem based learning.	Test, Assignment report and Project report.
PLO4 Investigation	Conduct investigation of well-defined problems, locate and search relevant references, conduct standard tests and measurements.	Laboratory work, Industrial training, final year project and group projects.	Assignment report, Log book and Project report.
PLO5 Modern Tool Usage	Apply computational techniques, resources, and modern engineering and IT tools to solve engineering problems with an understanding of the limitations.	Laboratory work, Industrial training, project and group projects.	Laboratory reports, Supervisory Evaluation Project report.

<p align="center">PLO6 The Engineer and Society</p>	<p>Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the responsibilities relevant to the technician practice and solutions to engineering problems.</p>	<p>Lecture, Assignments, Projects, Industrial training and laboratory works.</p>	<p>Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report.</p>
<p align="center">PLO7 Environment and Sustainability</p>	<p>Explain and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts</p>	<p>Lecture, Assignments, Projects, Industrial training and laboratory works.</p>	<p>Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report</p>
<p align="center">PLO8 Ethics</p>	<p>Apply ethical principles and commit to professional ethics and responsibilities and norms of technician practice with integrity.</p>	<p>Active learning, Assignment, Project, Industrial training and laboratory work.</p>	<p>Assignment report, Project, Industrial training report and ethical values assessment.</p>
<p align="center">PLO9 Individual and Team Work</p>	<p>Work independently, and as a member or a leader in team to manage project in a diverse technical team towards achieving common goal.</p>	<p>Assignments, Projects, Industrial training, cooperative learning and discussion.</p>	<p>Project/assignment reports, Industrial training report and Presentations.</p>

<p align="center">PLO10 Communications</p>	<p align="center">Communicate effectively through written and oral mode and collaborate in managing team relationships in the engineering community and all levels of society.</p>	<p align="center">Assignment, laboratory work, Industrial training, cooperative learning and project</p>	<p align="center">Assignment report, laboratory report, Project report, Industrial training report and Presentation.</p>
<p align="center">PLO11 Project Management and Finance</p>	<p align="center">Demonstrate knowledge and apply engineering management principles and entrepreneur culture to manage projects/ activities in multi-disciplinary environments.</p>	<p align="center">Assignment, Projects, directed reading, internet searching, lectures, active and cooperative learning.</p>	<p align="center">Project report, Industrial training report and Assignment reports.</p>
<p align="center">PLO12 Life Long Learning</p>	<p align="center">Recognise the need for and engage in independent and life-long learning with digital applications and complex numerical and graphical/visual data.</p>	<p align="center">Assignment, Projects, Industrial training directed reading, active learning and discussion.</p>	<p align="center">Project report, Log book, assignment reports and Industrial training report.</p>
<p>15. Total credit hours to graduate</p>		<p>94 credit hours</p>	

16. Programme structures and features, curriculum and award requirements

This programme is offered on full-time based on a 2 Semester Academic Session with several subjects being delivered and assessed in each semester. Assessment is based on coursework, project and final examination.

Assessment:(Refer to UTM Academic Regulations)

- i. Lecture based course:
 - Final examinations (not less than 40%)
 - Coursework.
- ii. Skill-based course:
 - 100% Coursework.

Award requirements:

Students should achieve a total of 94 credit hours with minimum CPA of 2.00.

17. Career Prospect

Graduates of the program can work as assistant mechanical engineer or technical assistant, engineering entrepreneur and any related jobs in mechanical engineering. They also continue to further their study in various disciplines related to mechanical engineering in local or abroad.

18. UTM Diploma ++ Programme

Students are given the opportunity to enroll in short courses offered by university that are relevant to the engineering field during their studies

19. Our Uniqueness

This program is designed to:

- iii. Equip students with engineering skills through hands-on laboratories and workshop.
- iv. Comply to MQA and ETAC Standard

Student will go through four months of Industrial Training with established mechanical engineering firm or government sector in order to expose them with real working experience as a technician or assistant mechanical engineer. Also, the students to gain additional qualifications, broaden their knowledge in order to qualify for entry into honors or postgraduate programs, or undertake professional development for a range of purposes.

Students are given an opportunity to enroll in short courses offered by university during semester breaks. The courses are:

- i. Air-conditioning and refrigerator
- ii. Welding
- iii. Automotive
- iv. CAD
- v. CNC

20. Facilities Available

List of Laboratories:

- i. Fluid Engineering laboratory
- ii. Strength Material laboratory
- iii. Mechanic Machine laboratory
- iv. Material Science laboratory
- v. Thermodynamics laboratory
- vi. Flexible Manufacturing laboratory
- vii. Welding workshop
- viii. Air-conditioning workshop
- ix. Machining workshop
- x. Automotive workshop
- xi. Sheet metal and fitting workshop
- xii. Computer Laboratory
- xiii. Language Laboratory
- xiv. Science Laboratory
- xv. Library
- xvi. AutoCAD software
- xvii. C++ software

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS 1012	Value and Identity	2
UHLB 1032	Introductory Academic English	2
DDWS 1712	Physics	2
DDWS 1113	Engineering Mathematics 1	3
DDWJ 1911	Workshop Technology 1	1
DDWH 1022	Basic Electrical Engineering	2
DDWJ 1503	Engineering Drawing	3
DDWJ 1912	Experimental Method	2
Total		17

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS1182/ UHLM 1122	Appreciation for Ethics and Civilisation / Malay Communication 1	2
UHLB 1042	Intermediate Academic English	2
DDWS 1023	Engineering Mathematics 2	3
DDWS 1412	Chemistry	2
DDWH 1012	Electronics	2
DDWJ 1203	Statics	3
DDWJ 1802	Industrial Engineering	2
DDWJ 1931	Workshop Technology 2	1
Total		17

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULRF 2xx2	Service Learning & Community Engagement Courses	2
DDWJ 2113	Solid Mechanics 1	3
DDWJ 2413	Thermodynamics 1	3
DDWJ 2513	Introduction to Design	3
DDWJ 2203	Dynamics	3
DDWJ 2013	Programming	3
Total		17

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWJ 2423	Thermodynamics 2	3
DDWJ 2123	Solid Mechanics 2	3
DDWJ 2303	Fluid Mechanics 1	3
DDWJ 2603	Material Science	3
DDWJ 2912	Engineering Laboratory 1	2
Total		14

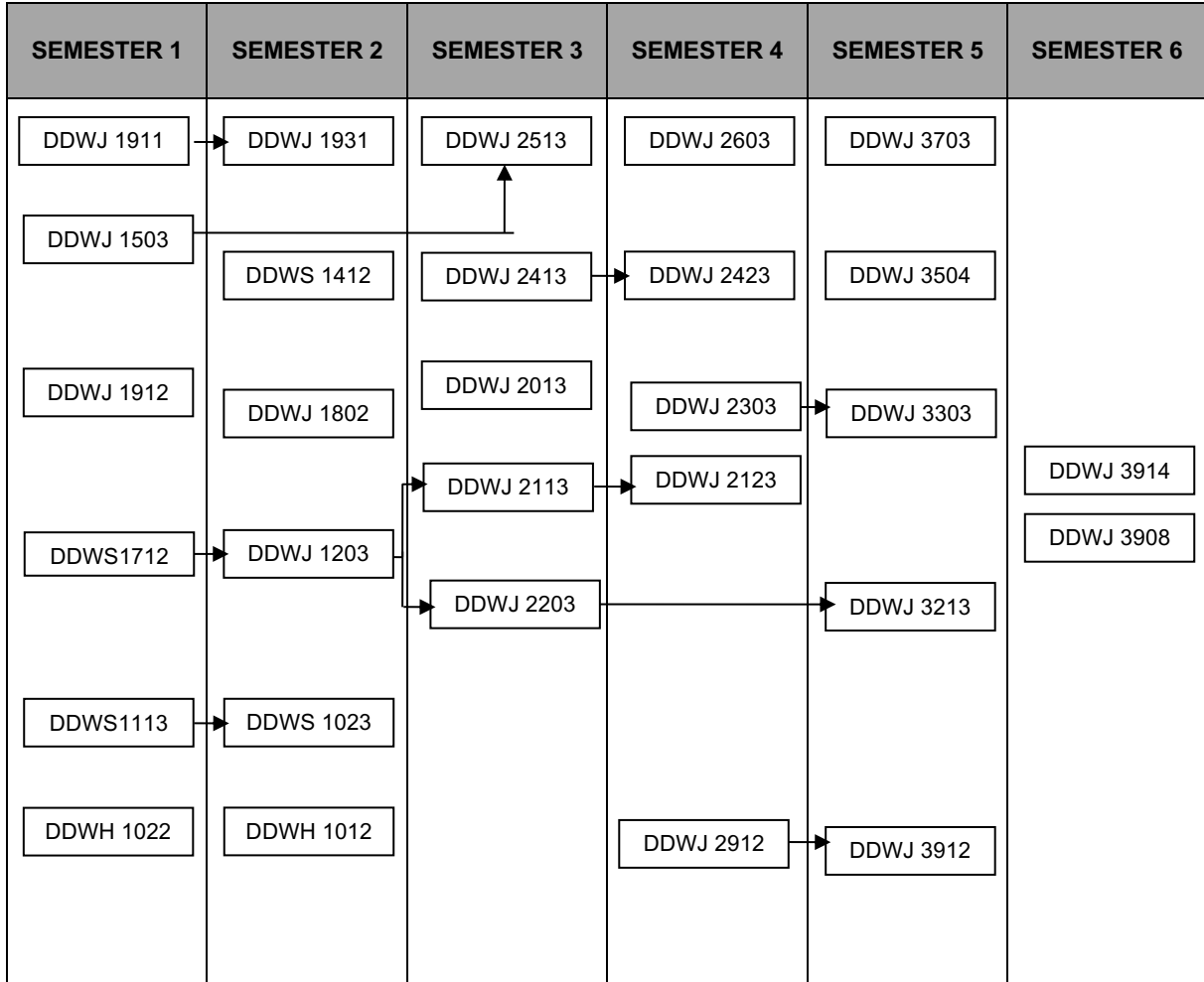
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWJ 3703	Manufacturing Process	3
DDWJ 3213	Mechanics of Machines	3
DDWJ 3303	Fluid Mechanics 2	3
DDWJ 3504	Final Year Project	4
DDWJ 3912	Engineering Laboratory 2	2
Total		15

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWJ 3908	Industrial Training	8
DDWJ 3914	Industrial Training Report	4
	Total	12
	Total Credits	92

**PRE-REQUISITE
DIPLOMA IN MECHANICAL ENGINEERING**



***Pre-requisite at least D+**

SYNOPSIS OF CORE COURSES

DIPLOMA IN MECHANICAL ENGINEERING

DDWJ 1911: Workshop Technology 1

This course presents the principles and hands-on for mechanical engineering programme. In particular, it is designed to provide hands-on experience using mechanical workshop instruments. Workshops involved are particularly of mechanical engineering such as welding workshop, fitting workshop, milling workshop, lathe workshop and CNC workshop. Students also will be given a project for each workshop and have to finish in a certain given period throughout the semester. At the end of this course, student should be able to use workshop tools and finished the project in the period given.

DDWJ 1503: Engineering Drawing

This course leads students to an understanding of engineering drawing, an essential means of communication in engineering. This course will cover the basics of technical drawing (basic CAD/computer skills, lettering, geometrical drawing, orthographic projection, 3D projections, dimensioning, sectioning, etc.) through a series of assignments and a project. Engineering drawings will be completed using conventional drawing tools, and CAD. At the end of this course, the students should be able to develop technical skills according to engineering drawing standards.

DDWJ 1912: Experimental Methods

This course is conducted by lectures and laboratory experiments where students are exposed to the experimental method theory for the initial weeks followed by laboratory works. The lectures shall cover the fundamentals of the experimental method and the basic principles in measurements, instrumentation and analysis of results. It shall focus on the design of mechanical experiments, various types of measuring instruments inclusive of sensors and transducers, estimation of errors and display of results. It shall also cover the analysis of the results and various aspects of report writing. Student comprehension will be tested by two written tests. During the laboratory sessions, several groups of 5 – 6 students will be formed to conduct several experiments. The students are expected to apply the theories covered in the first part of the semester when performing the various experiments involving data recording, displaying of results as well performing error analysis using various statistical approaches. Written reports are to be prepared for the various experiments conducted. At the end of the course, students are able to conduct experiments with the appropriate measuring tools as well as performing error analysis using various statistical methods before finally producing technical reports using appropriate format and standards.

DDWH 1022: Basic Electrical Engineering

The course introduces the basics of electrical power for non-electrical students. Topics covered are direct current (DC) and alternating current (AC) generation and analysis of simple electric circuits, three phase system, transformer and dc machines. In the DC circuits the emphasis is on evaluating voltage current, resistance and power by applying basic laws and rules. In AC circuits, single phase and three phase system concepts are introduced. The course also includes the constructional features, principles of operational and performance analysis of transformer and dc machines. At the end of this course, student will be able to understand the basics of electrical engineering.

**DDWJ 1931: Workshop Technology 2
(Pre-requisite DDWJ 1911)**

This course presents the principles and hands-on for mechanical engineering programme. In particular, it is designed to provide hands-on experience using mechanical workshop instruments. Workshops involved are particularly of mechanical engineering such as an automotive workshop, CNC workshop, air conditioning workshop, sheet metal workshop and moulding workshop. Students also will be given a project for each workshop and have to finish in a certain given period through-out the semester. At the ends of this course, student should be able to use workshop tools and finished the project in the period given.

DDWJ 1802: Industrial Engineering

Industrial engineering tackles issues on the efficiency and effectiveness of doing work. Efficiency and effectiveness are the concepts of productivity. Productivity ensures the effective cost of organizational operation, competitiveness and survival of an organization. Industrial engineers are technical experts who also coach, facilitate teamwork at all levels of an organization, and participate in top management visioning. The techniques are tools to improve productivity. At the end of this subject, it is aimed to provide the basic techniques of Industrial Engineering to enable the students to design improve and install integrated systems of people, materials, information, and equipment.

**DDWJ 1203: Statics
(Pre-requisite DDWS 1712)**

This course will introduce the students to the concepts of the first, second and third Newton Laws. Later each law is applied to a particle and then to rigid bodies which are subjected to a system of coplanar forces. A general case of 2D and 3D force systems acting on rigid bodies is then introduced. At the end of the course, students should be able to apply the laws of Newton in most engineering structural problems.

DDWH 1012: Electronics

The course introduces the basics of electronics for non-electrical students. This subject consists of an introduction to semiconductor devices such as diodes, transistors and operational amplifiers. Introduction to diode analysis and applications. Introduction to bipolar junction transistor (BJT), structure, symbol, characteristics and operation. BJT biasing, BJT as the amplifier. Introduction to field effect transistor (FET) structure, symbol, characteristics and operation, FET biasing, FET as the amplifier. Introduction to the operational amplifier, symbol, characteristics, basic circuit and applications.

**DDWJ 2513: Introduction to Design
(Pre-requisite DDWJ 1503)**

This course is designed to expose students to be creative in the design process based on the scientific method by applying the fundamental principles and learning to solve engineering design problems creatively and effectively according to schedule. At the end of this course, the students should be able to develop concept sketches, analyse design requirements and develop communication skills.

**DDWJ 2113: Solid Mechanics 1
(Pre-requisite DDWJ 1203)**

This course covers the basic concept of stress and strains analysis of deformable bodies. Determination of internal forces and moments due to external loadings are initially covered. Concepts of normal and shear stress and strain are introduced for simple structural members. Further concepts of stresses due to bending, shear, torsional and combined loadings are developed. Statically Indeterminate cases of structural members due to axial, torsional and temperature differential loadings are also introduced. The stress in thin cylinder is covered before finally introducing the theory of deflection of the beam. At the end of the course, students are able to perform basic structural analysis involving the basic concept of stress and strain.

DDWJ 2413: Thermodynamics 1

Concepts of the first law of thermodynamics for closed and open systems. Definition of different types of energy and their relation with work and heat. Process analysis for closed and open systems. Steady state equation for an open system. Second law of thermodynamics including heat engines and reversed heat engines. Concept of entropy, entropy changes for simple compressible substances, entropy balance and entropy creation. At the end of the course students should be able to apply and analyses thermodynamics first and second law in most engineering energy problems.

DDWJ 2603: Materials Science

This course is an important subject that relates materials structure and their properties. This basic knowledge is necessary for engineers who are involved in designing certain components and products so that the most suitable materials are utilized. At the end of this course, students should be able to describe materials such as structure, properties, phase diagram, treatment, etc.

**DDWJ 2203: Dynamics
(Pre-requisite DDWJ 1203)**

This course introduces students to the branch of applied mechanics concerned with the study of force on bodies motion. The study of dynamics begins with an introduction of the principles of kinematics, then followed by introducing Newton's laws, which are applied to solve rectilinear and curvilinear motion problems. The course also exposes students to the analysis of the work and energy, impulse and momentum, and to understand the principles of rigid body motion. At the end of this course, students will be able to understand the geometric aspects of motion and the forces causing the motion in the case of particles and rigid bodies.

DDWJ 2013: Programming

This course formally introduces the concept of computers, algorithms, programming languages, pseudo code, and the design of programs for the solution to computational engineering problems. The two programming languages introduced in this course are C and MATLAB. Topics covered in this course include data types, constants, variables, arithmetic operations, assignment statement, looping, formatted I/O, functions, arrays, matrix operations, data structures, plotting, and model building.

**DDWJ 2423: Thermodynamics 2
(Pre-requisite DDWJ 2413)**

This course gives the applications of basic thermodynamics covered in Thermodynamics 1. These include air compression by a reciprocating compressor, the power cycles which comprise of the steam and gas turbine power plants, the internal combustion engines, the refrigeration cycles for both the reversed Rankine cycle that uses the vapor-compression refrigeration cycles and the gas refrigeration cycles, and also heat transfer with the emphasis on the conduction mode of heat transfer as well as heat exchangers. At the end of this course, students learned the thermodynamics systems and their performance criteria and are able to solve the system's problems.

DDWJ 2123: Solid Mechanics 2
(Pre-requisite DDWJ 2113)

This course presents further applications to structural analysis. It involves the studies on the transformation of stress and strain, the application of failure theories and the stress analysis of a thick cylinder. Deflection and slope analysis of simple structures using energy method is covered. Buckling of columns is then considered. The elastic theory of beam and shaft is extended to the region of plastic to increase their usage using the assumption of elastic-plastic behavior. At the end of the course, students will be able to perform basic structural analysis using the first principles approach.

DDWJ 2303: Fluid Mechanics 1

This course involves the fundamentals and applications of static and dynamic fluids. For static fluid includes the fluid properties, pressure measurements, hydrostatic forces, buoyancy and stability. For dynamic fluid includes the application of the Bernoulli, continuity and momentum equations such as jet forces on stationary and moving planes and vanes, pipe bends, and nozzles; flow measurement using venturi, orifice meters and pitot tubes; flow in pipes; dimensional analysis and similarity. At the end of this course, student should be able to explain and solve the problem related to fluid mechanics.

DDWJ 2912: Engineering Laboratory 1

Design to enhance the understanding of principles and theories of mechanical engineering courses. Students will do the experiments in fluid Mechanics laboratory, Mechanic of machines laboratory, solid Mechanics laboratory and Thermodynamics laboratory. They are required to analyze, evaluate and discuss the experiment results using techniques learned in the Instrumentation and Measurement course.

DDWJ 3703: Manufacturing Process

This subject consists of introduction to manufacturing processes, common aspects in manufacturing, metal casting, bulk metal forming, sheet metal forming, forming of polymer, machining operations, non-traditional machining, joining processes, and manufacturing in competitive environments. Upon completion of the course, students should be able to recommend suitable part manufacturing processes when provided a set of functional requirements and product development constraints.

DDWJ 3213: Mechanics of Machine
(Pre-requisite DDWJ 2203)

This course is a continuation of the dynamic course. The chapter will be covered several analysis of gear systems, belts, balancing and crank effort diagrams. Besides that, topics about governors are also discussed. The basic of vibration chapter will include free vibration and force vibration analysis. Generally, this course is intended to cover the field of engineering theory, analysis and practice which is described as mechanisms of machines and vibration analysis.

DDWJ 3303: Fluid Mechanics 2
(Pre-requisite DDWJ 2303)

This course introduces students to the fluid dynamic principle comprised of the non-viscous and viscous fluids. The course begins with a Potential Flow Theory which discusses a non-viscous fluid flow behavior followed by the Boundary layer theory for the viscous fluid flow behavior. In addition, a topic pertaining to flow behavior when there is a change in a fluid density will be introduced in Compressible Flow theory. The course also covers the theory of Turbo machines comprised of turbines and pumps. At the end of this course, student should be able to explain and solve the problem related to fluid mechanics II.

DDWJ 3912: Engineering Laboratory 2
(Pre-requisite DDWJ 2912)

Design to enhance the understanding of principles and theories of higher level mechanical engineering courses. Students will do the experiments in the Fluid Machines laboratory, Machines and Vibration laboratory, Material Science laboratory and Thermodynamics laboratory. They are required to analyze, evaluate and discuss the experiment results using techniques learned in the Instrumentation and Measurement course.

DDWJ 3504: Final Year Project

This course encourages innovative thinking and the development of practices that extend the discipline and application of new technologies responsibly and creatively to meet the social, cultural, economic, environmental, as well as the business of contemporary and future societies. It aims to educate versatile, practical and imaginative students to meet the demands from the industry by integrating a broad spectrum of technological subjects with human factors design. The philosophy is based on the understanding of function, from basic mechanisms to complex electronic devices while maintaining a careful balance between aesthetic values of the subjects in relation to its technical performance.

DDWJ 3908: Industrial Training

This course requires the students to apply all technical and soft skills knowledge that has been taught throughout the study years. The students will be exposed to the real working environment and practicing their communication skills to solve real problems.

DDWJ 3914: Industrial Training Report

This course requires the students to produce a report on the industrial training carried out by them. The report will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or department. After completing the report, the students should be able to present information and express ideas clearly, effectively and confidently.

PROGRAMME SPECIFICATIONS

1. Programme Name	Diploma in Chemical Engineering			
2. Final Award	Diploma in Chemical Engineering			
3. Awarding Institution	UTM			
4. Teaching Institution	UTM			
5. Professional or Statutory Body of Accreditation	Engineering Technology Accreditation Council (ETAC)			
6. Code of Programme	DDWT			
7. Language(s) of Instruction	Bahasa Melayu and/or English			
8. Mode of Study (Conventional, distance learning, etc)	Conventional			
9. Mode of operation (Franchise, self-govern, etc)	Self-govern			
10. Study Scheme (Full Time/Part Time)	Full-time			
11. Study Duration	Full time: Minimum : 6 semester (3 Years) Maximum : 9 semester (4 ½ Years)			
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	15
Short	0	3	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, with a minimum of **THREE (3)** credit (**GRADE C**) and **ONE (1)** of subjects in science/ technical/ vocational institution

B) SPECIFIC REQUIREMENTS

1. Obtained credit (**GRADE C**) in the following subject:
 - Mathematics
 - ONE (1) of the subjects in Science / Technical / Vocational Institution
 - ONE (1) other subject (NOT inclusive of previously listed subjects with credits)
2. Obtained a pass (**GRADE E**) in the following subjects:
 - English
 - Additional Mathematics
3. Not having colour blindness or any disabilities which may hinder practical work

OR

Obtained qualification from Technical / Vocational / Skill Institution or equivalent which, relevant and recognized with credit.

- Bahasa Melayu SVM Code 1104 AND Academic CGPA ≥ 3.33 AND Vocational CGPA ≥ 3.67

OR

Passed in Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / recognized Certificate which is equivalent and related with the Diploma Programme applied by the student AND obtains a minimum cumulative grade point average (CGPA) of 2.00.

	<p style="text-align: center;"><u>OR</u></p> <p>Matriculation Certificate (Science Stream and Engineering) by obtaining a minimum cumulative grade point average (CGPA) of 2.00.</p> <p style="text-align: center;"><u>OR</u></p> <p>Passed O-Level with a minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of Science subjects</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> • <i>Candidates for Diploma in Engineering must not be colour blindness except for Diploma in Civil Engineering.</i> • <i>Candidates who are admitted with Certificate without credits in Mathematics at the SPM or equivalent can be admitted IF the Mathematics subject offered is equivalent to the SPM level.</i>
<p>13. Programme objectives:</p> <p>Graduates of this program will be able to:</p> <ol style="list-style-type: none"> i. Be competent, creative and innovative in solving various problems in Chemical Engineering field. ii. Be team leaders with effective communication skill and strong self-confidence who strive for career advancement through life-long learning. iii. Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities. 	

14. Programme Learning Outcomes (PLO)			
(a) Technical Knowledge and Competencies			
Programme Learning Outcomes(PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge	Apply knowledge of mathematics, applied science, engineering fundamentals and chemical engineering principles to practical procedures and practices.	Lectures, tutorials, industrial training, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report
PLO2 Problem Analysis	Identify and analyse chemical engineering problems that leads to substantial conclusions using specific method of analysis.	Project based learning, active and cooperative learning, case studies, problem-based learning.	Test, Assignment report and Project report.
PLO3 Design/development of solutions	Design solution for technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.	Project based learning, active and cooperative learning, case studies, problem-based learning.	Test, Assignment report and Project report.
(b) Generic Skills			
Programme Learning Outcomes(PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO4 Investigation	Conduct investigation of well-defined problems, locate and search relevant references, conduct standard tests and measurements.	Laboratory work, Industrial training, final year project and group projects.	Assignment report, Log book, and Project report.

<p align="center">PLO5 Modern Tool Usage</p>	<p>Apply computational techniques, resources, and modern engineering and IT tools to solve engineering problems with an understanding of the limitations.</p>	<p>Laboratory work, Industrial training, project and group projects.</p>	<p>Laboratory reports, Industrial training report, Project report.</p>
<p align="center">PLO6 The Engineer and Society</p>	<p>Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the responsibilities relevant to the technician practice and solutions to engineering problems.</p>	<p>Lecture, Assignments, Projects, Industrial training and laboratory works.</p>	<p>Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report</p>
<p align="center">PLO7 Environment and Sustainability</p>	<p>Explain and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts.</p>	<p>Lecture, Assignments, Projects, Industrial training and laboratory works.</p>	<p>Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report</p>
<p align="center">PLO8 Ethics</p>	<p>Apply ethical principles and commit to professional ethics and responsibilities and norms of technician practice.</p>	<p>Lecture, Assignments, Projects, Industrial training and laboratory works.</p>	<p>Assignment, Project and Industrial training report</p>
<p align="center">PLO9 Individual and Team Work</p>	<p>Work independently, and as a member or a leader in a team to manage project in a diverse technical team.</p>	<p>Assignments, Projects, Industrial training, cooperative learning and discussion.</p>	<p>Project/assignment reports, Industrial training report and Presentations.</p>
<p align="center">PLO10 Communication</p>	<p>Communicate effectively through written and oral modes to engineering community and all levels of society.</p>	<p>Assignments, Industrial training and projects</p>	<p>Assignment reports, Project report, Industrial training report and Presentations.</p>

<p style="text-align: center;">PLO11 Project Management and Finance</p>	<p>Demonstrate knowledge and apply engineering management principles and entrepreneur culture to one's own work, or in a team to manage projects in multidisciplinary environments.</p>	<p>Assignment, Projects, directed reading, internet searching, lectures, active and cooperative learning.</p>	<p>Project report and Assignment reports.</p>
<p style="text-align: center;">PLO12 Life Long Learning</p>	<p>Recognise the need for and engage in independent and life-long learning.</p>	<p>Assignment, Projects, Industrial training directed reading, cooperative learning and discussion.</p>	<p>Project report, Log book, assignment reports and Industrial training report</p>
<p>15. Total credit hours to graduate</p>		<p style="text-align: center;">93 credit hours</p>	
<p>16. Programme structures and features, curriculum and award requirements</p>			
<p>This programme is offered on full-time based on a 2 Semesters Academic Session with several courses being delivered and assessed in each semester.</p> <p>Assessment: Final examinations (not more than 50%) and coursework. (Refer to UTM Academic Regulations)</p> <p>Award requirements: Students should achieve a total of 93 credit hours with minimum CPA of 2.00.</p>			
<p>17. Career Prospect</p>			
<p>Graduates of the program</p> <ol style="list-style-type: none"> a) Can work as assistant engineer or technical assistant in chemical engineering industry or any engineering industry. b) May continue to further their study in various disciplines related to chemical engineering at local or foreign universities. 			

18. UTM Diploma ++ Programme

Students are given the opportunity to enroll in short courses offered by university that are relevant to the engineering field during their studies.

19. Facilities Available

List of Laboratories:

- a. Computer Laboratory
- b. Language Laboratory
- c. Chemistry Laboratory
- d. Physics Laboratory
- e. Library
- f. Fluid Engineering Laboratory
- g. Thermodynamics Laboratory
- h. Environmental Engineering Laboratory
- i. Unit Operations Laboratory
- j. AutoCAD software
- k. Matlab software
- l. Workshop

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
DDWS 1012	Engineering Mathematics 1	2
DDWS 1413	Chemistry	3
DDWS 1713	Physics	3
DDWT 1111	Engineering Drawing	1
DDWT 1213	Statics	3
DDWJ 1911	Workshop Technology 1	1
ULRS 1182	Appreciation of Ethics and Civilizations	2
UHLB 1032	Introductory Academic English	2
Total		17

YEAR 1 (SEMESTER 2)

Code	Course	Credit
DDWS 1022	Engineering Mathematics 2	2
DDWH 1103	Electrical Principle	3
DDWT 1123	Mass Balance	1
DDWT 1223	Thermodynamics	3
DDWJ 1931	Workshop Technology 2	3
ULRS 1012	Value and Identity	2
UHLB 1042	Intermediate Academic English	2
Total		16

YEAR 2 (SEMESTER 3)

Code	Course	Credit
DDWS 2423	Analytical Chemistry	3
DDWT 2133	Energy Balance	3
DDWT 2233	Fluid Mechanics	3
DDWT 2711	Fluid Mechanics and Thermodynamics Laboratory	1
DDWT 2513	Computer Engineering	3
ULAJ 1112	Japanese Language	2
Total		15

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWT 2313	Transport Processes	3
DDWT 2243	Chemical Reaction Engineering	3
DDWT 2323	Refinery and Petrochemical Technology	3
DDWT 2413	Environmental Engineering	3
DDWT 2721	Chemical Reaction and Environmental Engineering Laboratory	1
ULRF 2xx2	Service Learning & Community Engagement Courses	2
Total		15

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWT 3323	Separation Processes	3
DDWT 3522	Instrumentation	2
DDWT 3533	Plant Operation and Maintenance	3
DDWT 3543	Occupational Safety and Health	3
DDWT 3731	Unit Operation Laboratory	1
DDWT 3814	Final Year Project	4
	Total	16

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWT 3908	Industrial Training	8
DDWT 3914	Industrial Training Report	4
	Total	12
	Total Credits	91

**PRE-REQUISITE
DIPLOMA IN CHEMICAL ENGINEERING**

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6
UHLB 1032	UHLB 1042				
DDWS 1012	DDWS 1022	DDWS 2423			
DDWS 1413	DDWH 1103	DDWT 2233	DDWT 2313	DDWT 3323	DDWT 3908
DDWS1713	DDWT 1123	DDWT 2133	DDWT 2243	DDWT 3522	DDWT 3914
DDWT 1111	DDWT 1223	DDWT 2711	DDWT 2323	DDWT 3533	
DDWT 1213	DDWJ 1931	DDWT 2513	DDWT 2413	DDWT 3543	
DDWJ 1911	UHIT 1022	ULAJ 1112	DDWT 2721	DDWT 3731	
UHMS 1182		UHMT 1012	UKQF 2112	DDWT 3814	

SYNOPSIS OF CORE COURSES

DIPLOMA IN CHEMICAL ENGINEERING

DDWT 1111: Engineering Drawing

This course consists of geometric, loci construction, concept of tangency, multi view projection (orthographic projection) and isometric projection and application of AutoCAD software for producing engineering drawing.

DDWT 1213: Statics

This course will introduce the students with the concepts of the first, second and third Newton Laws. Later each law is applied to a particle and then to rigid bodies which are subjected to a system of coplanar forces. A general case of 2D and 3D force systems acting on rigid bodies are then introduced

DDWJ 1911: Workshop Technology 1

This course presents the principles and hands-on for basic engineering. In particular, it is designed to provide hands-on experience using mechanical workshop instruments. Workshops involved are welding workshop, fitting workshop, milling workshop, lathe workshop and CNC workshop. Students also will be given a project for each workshop and have to finish in a certain given period throughout the semester.

DDWH 1103: Electrical Principle

This course is designed to introduce students with the basic principles, laws, theorems and methods of analysis for solving problems in Direct Current (DC) and Alternating Current (AC) circuits. Laws, theorems and analysis methods that will be covered in series, parallel and series-parallel circuits include Ohm's Law, Kirchhoff Voltage and Current law analysis. The students are expected to be able to explain operation of electrical power equipment.

DDWT 1123: Mass Balance

This course introduces students to the chemical engineering profession and the fundamental operations of chemical process equipment. It also provides students with the basic principles of chemical engineering material balances as well as calculation techniques to solve material balance problems for chemical process systems and equipment

DDWT 1223: Thermodynamics

Concepts of the first law of thermodynamics for closed and open systems. Definition of different types of energy and their relation with work and heat. Process analysis for closed and open systems. Steady state equation for open system. Second law of thermodynamics including heat engine and reversed heat engines. Concept of entropy, entropy changes for simple compressible substances, entropy balance and entropy creation.

DDWJ 1931: Workshop Technology 2

The workshop practice includes automotive workshop, CNC workshop, air conditioning workshop, sheet metal workshop and moulding workshop, which presents the principles and hands-on for mechanical engineering application. Led by trained learning instructors and workshop technicians, students receive series of training on workshop practice and then finish a project in a certain given period through-out the semester.

**DDWT 2133: Energy Balance
(Pre/co requisite DDWT 1123 (Mass Balance))**

This course introduces students to the chemical engineering profession and the fundamental operations of chemical process equipment. It also provides students with the basic principles of chemical engineering energy balances as well as calculation techniques to solve the material and energy balance problems for chemical process systems and equipment.

DDWT 2233: Fluid Mechanics

This course involves the fundamentals and applications of static and dynamic fluids. For static fluid includes the fluid properties, pressure measurements, hydrostatic forces, buoyancy and stability. For dynamic fluid includes the application of the Bernoulli, continuity and momentum equations such as jet forces on stationary and moving planes and vanes, pipe bends, and nozzles; flow measurement using venturi, orifice meters and pitot tubes; flow in pipes; dimensional analysis and similarity

DDWT 2711: Fluid Mechanics and Thermodynamics Laboratory

This course presents the principles and methodology for chemical engineering programme. In particular, is designed to understand the theory and application of measuring instruments and equipments, to discuss and evaluate experimental errors, to provide hands-on experience using laboratory instruments. Experiments involved are particularly of chemical engineering subjects such as thermodynamics and fluid mechanics. Students also learn formal technical writing skills which are required for all written reports.

DDWT 2513: Computer Engineering

This course formally introduces the concept of computers, algorithms, programming languages, pseudo code, and design of programs for solution to computational engineering problems. The two programming and languages introduced in this course are C and MATLAB. Topic covered in this course include data types, constants, variables, arithmetic operations, assignment statement, looping, formatted I/O, functions, arrays, matrix operations, data structures, plotting, and model building

**DDWT 2313: Transport Processes
(Pre/co requisite DDWT 2133 (Energy Balance))**

This course introduces students to the basic principles and application of heat and mass transfer in chemical engineering. The understanding from this course is useful for the better understanding in distillation, absorption, liquid-liquid extraction, membrane separation, leaching, evaporation and others chemical processes.

DDWT 2243: Chemical Reaction Engineering
(Pre/co requisite DDWT 2133 (Energy Balance))

This course introduces students to chemical reactor design and theories in the area of chemical reaction engineering with emphasis on homogeneous and heterogeneous reactions. It will examine some problems related to multiple reactions and non-isothermal operations. Students will also work cooperatively on a computer assignment to expose them to solving problems using software packages such as Polymath.

DDWT 2323: Refinery and Petrochemical Technology

This course presents the principles for chemical and physical processing in the Petrochemical and Refinery technologies. In particular, it emphasizes on the purpose of the process, understanding reaction chemistry, and their application. The course features extensive reading exercises as well as individual/group project and assignments.

DDWT 2413: Environmental Engineering

This course introduces the cause, effect and method to control pollution from industries. The course covers three major categories of industrial pollution: water pollution, air pollution and industrial waste management. In the first part, the course includes the source and types of water pollutants, environmental regulations pertaining to waste water discharge, and techniques to treat waste water before discharging to the environment. The second part of the course covers the source and effect of air pollution, regulations requirement for air pollution control, technology to control air pollution emissions from industries. The third part covers the management of industrial waste that includes definition of scheduled waste, scheduled waste regulations, and technique to manage the waste.

DDWT 2721: Chemical Reaction and Environmental Engineering Laboratory
(Pre/co requisite DDWT2243 (Chemical Reaction Engineering) & DDWT2313 (Transport Processes))

This laboratory course contains experiments that cover the basic concept in chemical reaction engineering and pollution control such as kinetic analysis of reaction, ambient air and water quality analysis. All experiments require students to apply fundamental laboratory techniques and skills as well as communication skill. Students, in group will demonstrate a mastery of laboratory techniques and clearly describe the qualitative and quantitative aspects of the experiments performed.

DDWT 3522: Instrumentation

This course provides the basic knowledge of the principles and applications of some instruments commonly used in chemical industries. Topics include measurement uncertainty, sampling techniques, sample pre-treatment, ultraviolet-visible spectroscopy, gas chromatography, high performance liquid chromatography and atomic absorption spectroscopy.

DDWT 3533: Plant Operation and Maintenance

This course exposes students to the operation of chemical plant from a practical standpoint. The topics include the materials used in the construction of a chemical plant, techniques of operations, equipment in chemical plant. The course also discusses about the storage and conveyance of solids, liquids, and gases from raw materials to finished products. The course discusses the measurement of variable quantities, and the maintenance of a chemical plant. The last chapters deal with the services and safety aspects of chemical operations.

DDWT 3543: Occupational Safety and Health

This course presents a basic knowledge of occupational safety and health (OSH) at work. In particular, it emphasizes on current issues and best practices in OSH in Malaysia and the world, OSH legislations, methods of hazard identification, accident prevention concept and its implementation at workplace. At the end of this course, it is expected that the students will be able to appreciate the legal requirements, theoretical and practical aspect of OSH in industry and its impact to surrounding public community.

DDWT 3731: Unit Operation Laboratory (Pre/co requisite DDWT 3323 (Separation Processes))

This course introduces students to the equipment in the separation processes discussed in Separation Processes course. This will give a 'hands on' experience to the students on how to handle the unit operations and to interpret the data taken from the experiments. There are also various types of packing and plate in the column (absorption and distillation) that are being used in the laboratory. Comparison can be made on the efficiency of each packing/plate after all the packing/plate types have been used. This subject also demonstrates the basic principles of different types of unit operations involved in the chemical industries such as liquid-liquid extraction and heat exchanger. Students will be assessed through instructor's observation, peer evaluation and technical report submitted.

DDWT 3814: Final Year Project

Chemical final year project requires the understanding of chemical core courses. Project-based approach will be used in the project implementation which can be done in groups of 2 to 4 students. The topic will be proposed by students. They must submit a project proposal plan consist of project selection, project planning, literature review, work of theoretical, experimental or computing nature leading to achievement of objective and preparation of project report.

DDWT 3323: Separation Processes (Pre/co requisite DDWT 2313 (Transport Processes))

This course introduces different types of unit operations involved in the chemical and other physical processing industries such as humidification, absorption, distillation, liquid-liquid extraction and solid-liquid extraction (leaching). It also deals with design of separation operations using mass transfer principles.

DDWT 3908: Industrial Training

This course requires the students to apply all technical and soft-skills knowledge that have been taught throughout the study years. The students will be exposed to the real working environment and practicing their communication skills in order to solve real problems.

DDWT 3914: Industrial Training Report

This course requires the students to produce a report on the industrial training carried out by them. The report will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or department. After completing the report, the students should be able to present information and express ideas clearly, effectively and confidently.

DEPARTMENT OF

MANAGEMENT

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Property Management		
2. Final Award		Diploma in Property Management		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Board of Valuers, Appraisers, Estate Agents and Property Managers (BOVAEA)		
6. Code of Programme		DDWF		
7. Language(s) of Instruction		Bahasa Melayu and English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full Time and Part Time		
11. Study Duration		Full-time Minimum: 6 semesters (3 Years) Maximum: 9 semesters (4½ Years) Part-time Minimum: 8 semesters (4 Years) Maximum: 18 semesters (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	14
Short	0	4	0	9

12. Entry Requirement

A) GENERAL UNIVERSITY REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC PROGRAMME REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of **THREE (3) credits (GRADE C)** inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects (NOT inclusive of previously listed subjects with credits)

AND

Obtained a pass (GRADE E) in English Language.

OR

Obtained qualification from Polytechnic / Kolej Komuniti / Certificate which, relevant with the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Obtained Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / Certificate which, relevant with Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Passed O-Level with minimum **THREE (3) credits (GRADE C)** inclusive of Mathematics and TWO (2) of other subjects.

	OR Any related qualifications awarded by the Malaysia Higher Education.
--	---

13. Programme Educational Objectives:

Diploma in Property Management is designed to produce graduates who:

- i. Competent, creative and innovative in solving various problems in the field of property management, property valuation and real estate agency.
- ii. Communicate effectively with leadership skills and self-confidence while striving for career advancement through lifelong learning.
- iii. Uphold ethical values and contribute to the needs of organizations and communities by participating in various related activities.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes(PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge (KW)	Demonstrate and apply property management knowledge, property valuation, real estate and property law in development as semi-professional property manager, valuation assistant, real estate agent or real estate entrepreneur	Lectures, tutorials, seminars, directed reading, internet searching, active and cooperative learning.	Tests, Quizzes, Examinations, Assignments, Presentation, and Industrial Training.

PLO2 Application (CG)	Apply theories and principles of real estate management, real estate valuation, real estate agency, in problem solving, analyse and interpret real estate related data and write reports.	Computer application, field work, assignments and projects	Assignments, Project Report, Examinations, Industrial Training.
PLO3 Practical Skills (PS)	Demonstrate practical skills in using software and related equipment, skills and techniques related to property valuation, property management and real estate agency.	Computer application, field work, assignments, projects.	Assignments, Project Report, Examinations, Industrial Training.
(b) Generic Skills			
Programme Learning Outcomes(PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO4 Interpersonal Skills (IPS)	Interact effectively and collaboratively in managing relationships in teams and within the organizations.	Assignments, projects, and seminars.	Project Or Assignments, Presentations, Industrial Training.
PLO5 Communication Skills (CS)	Communicate effectively in oral or written with various stakeholders and all levels of society.	Assignments, projects, and seminars.	Project or Assignments, Presentations, Industrial Training.
PLO6 Digital Skills (DS)	Apply a range of digital applications as well as to seek and process data related to work and studies	Individual and group projects, cooperative learning, laboratory works, discussion.	Project and Assignment Reports, Presentations.

PLO7 Numeracy Skills (NS)	Use and interpret routine and complex numerical data in property management field	Individual assignments, group projects, cooperative learning, discussion.	Tests, Quizzes, Examinations, Project or Assignment Reports, Presentation.
PLO8 Leadership, Autonomy & Responsibility (LAR)	Demonstrate leadership qualities and be able to act as a responsible member of the group towards achieving common goal.	Individual assignments, group projects and cooperative learning.	Project or Assignment Reports, Peer evaluations, Presentation.
PLO9 Personal Skills (PRS)	Identify self-improvement initiatives and possibilities for career development or further education	Individual assignments, group projects, cooperative learning, discussion and industrial training.	Project or Assignment Reports and Industrial Training
PLO10 Entrepreneurial Skills (ENT)	Demonstrate entrepreneurial behavior towards opportunities within organizations and businesses	Assignments, projects, field work, directed reading, internet searching, lectures, active and cooperative learning.	Project or Assignment Reports.
PLO11 Ethics and Professional Skills (ETS)	Demonstrate the ability to perform tasks and make decisions ethically, professionally and with integrity	Individual assignments, group projects and laboratory works.	Project or Assignment Reports and Industrial Training
15. Total credit hours to graduate			90 credit hours**
*Based on <i>Garis Panduan Matapelajaran Umum (MPU) Edisi ke-2, 2016</i> .			
** Based on requirement from Lembaga Penilai, Pentaksir, Ejen Harta Tanah dan Pengurus Harta Tanah (BOVAEA).			
*** Based on <i>Dasar Latihan Industri Institusi Pengajian Tinggi, 2010</i> .			

16. Programme structures and features, curriculum and award requirements

This programme is offered on full-time based on a 2 Semester Academic Session with several courses being delivered and assessed in each semester.

Assessment:

- i. Courses:
 - 50% - 100% Coursework
 - 0% - 50% Final examinations
- ii. Skill Acquisition (Acquired during Industrial Training)
- iii. Passing marks for all courses is not less than 40%. (Refer to UTM Academic Regulations)

Award requirements:

Students should achieve a total of 90 credit hours with minimum CPA of 2.00 inclusive of industrial training (10 credit hours). Course code: DDWF 3910.

17. Our Uniqueness

The programme is designed to provide the students with relevant theories and practice of real estate practice which covers the major area of property valuations, building management, and real estate agency and marketing. The relevance of the programme is strengthened through continuous relationship with the practitioners from different area of specialization within the real estate industry. The programme also emphasized on the systematic development of innovative thinking and creative problem solving skills, especially that related to the industry. Students will be trained not only in the specified areas, but also in self-discipline, communication skills and entrepreneurship. Students will gain valuable industry exposure and keep abreast with industry practices via industrial training.

18. Career Prospects and Career Paths

Graduates of the program:

- a. Can work as assistant property managers, valuation executives, probationary real estate agents, and management executives in property development and property market research.
- b. May also further their study in various disciplines related to property such as Bachelor of Property/Estate Management and Bachelor of Land Administration and Development, both local and overseas.

19. Facilities available

List of laboratories:

- a. Computer Laboratory
- b. Language Laboratory

20. Support for Students and Their Learning

Personal support

- Academic Advisor
- Counselling

Infrastructure support

- Internet access
- e-learning
- Digital library
- Health care and Recreational

Financial support

- National Higher Education Fund Corporation (PTPTN)
- Public Services Department (JPA)
- Yayasan Negeri
- Pusat Zakat Negeri
- Corporate Bodies
- Tabung Dermasiswa UTMSPACE
- Kumpulan Wang Simpanan Pekerja (KWSP)
- Corporate Bodies

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
UHLB 1032	Introductory Academic English	2
ULRS 1012	Value and Identity	2
DDWF 1433	Principles of Valuation	3
DDWF 1513	Building Technology	3
DDWF 1612	Malaysia Legal System	2
DDWF 1213	Valuation Mathematics	3
Total		15

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UHLB 1042	Intermediate Academic English	2
UHMS1182*/ UHLM 1122*	Appreciation for Ethics and Civilisation / Malay Language for Communication 1	2
DDWF 1523	Building Services	3
DDWF 1633	Law of Contract, Agency and Torts	3
DDWF 1023	Principles of Economics	3
DDWF 1423	Valuation Methodology	3
Total		16

YEAR 2 (SEMESTER 3)

Code	Course	Credit
UKQF 2XX2	Co-curriculum and Service Learning	2
DDWF 2733	Surveying and Computation	3
DDWF 2533	Building Maintenance	3
DDWF 2433	Investment Valuation	3
DDWF 2633	Real Estate Law	3
DDWF 2353	Real Estate Management	3
Total		17

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWR 3652	Elective / Portfolio Design	2
DDWF 2843	Urban Planning & Development Control	3
DDWF 2643	Real Estate Development Law	3
DDWF 2143	Introduction to Accounting and Finance	3
DDWF 2342	Real Estate Marketing Practice	2
DDWF 2443	Applied Valuation	3
Total		16

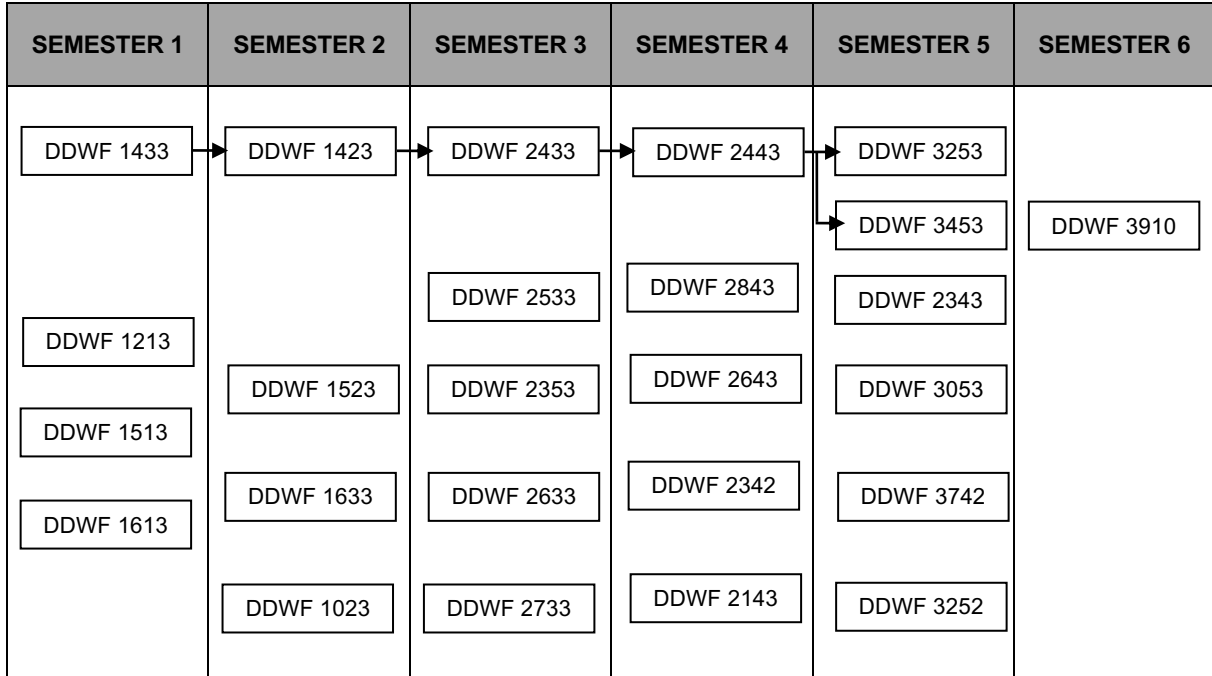
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWF 2343	Real Estate Agency Practice	3
DDWF 3053	Economics in Real Estate	3
DDWF 3253	Computer Application in Real Estate	3
DDWF 3453	Statutory Valuation	3
DDWF 3742	Introduction to Land Development	2
DDWF 3252	Statistics for Real Estate	2
	Total	16

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWF 3910	Industrial Training	10
	Total	10
	Total Credits	90

**PRE-REQUISITE
DIPLOMA IN PROPERTY MANAGEMENT**



SYNOPSIS OF CORE COURSES

DIPLOMA IN PROPERTY MANAGEMENT

DDWF 1433: Principles of Valuation

This course introduces students to some major views and theories of real estate profession in Malaysia. It will emphasize on the general concepts of introduction to the real estate, real estate business, real estate fundamentals, and real estate valuation. At the end of this course, students should be able to appreciate the real estate environment in Malaysia. Besides that, students should also be able to work in a team.

DDWF 1213: Valuation Mathematics

The topics covered in this course are simple interest, compounded interest, annuity, valuation mathematic, valuation mathematic, depreciations etc. Students need to understand the subjects and to be able to apply them in real estate profession.

DDWF 1513: Building Technology

This course introduces students to some major views, the process, the elements and the theories of building construction in Malaysia under the Uniform Building Act 1984. It will emphasize on the general concepts of the building development process, building structure, brick works, building services, concrete work, wood work, building finishing, building drawing, reading the floor plan and calculate the building area of the floor plan based on the “Uniform Method of Measurement of Buildings” by the Institute of Surveyors Malaysia (ISM).

DDWF 1612: Malaysia Legal System

This course introduces students to some major theories and concepts about Malaysian Legal System. In this course, students need to understand the history of the legal system development in Malaysia, the various source of law, the judicial system, the court system etc. It acts as a legal foundation for the students before continuing to the more advance legal course, for example the Law of Contract, Agency & Torts which is offered in the following semester.

DDWF 1023: Principles of Economy

This course is design to expose students to basic knowledge of economics. This 3 credits subject will consist of both theories and concepts in microeconomics and macroeconomics at a foundation level. The course starts with basic principles of microeconomics, demand and supply, market equilibrium, consumer behaviour, production and cost of production and market structure. The course will then proceed to the topics in macroeconomics such as introduction to macroeconomics, consumption and savings, investment and public finance, introduction to monetary system and finally, inflation. At the end of the course students will understand basic economics knowledge and able to apply the concepts for future related subjects in their daily lives.

DDWF 1523: Building Services

This course introduces students to some major views and theories in the environment of building services in Malaysia based on the Uniform Building Act 1984. It will emphasize on the general concepts of the building services, the water supply system, electricity supply system, drainage system, air system etc. At the end of this course, students should be able to appreciate the general principles of building services in Malaysia, increase their awareness on the roles of building development based on Uniform Building Act 1984, comprehend the concepts and practical aspects of building services. Besides that, students should also be able to work in a team.

**DDWF 1423: Valuation Methodology
(Pre-requisite: DDWF 1433)**

This course consists of introduction to general understanding of the appraisal process and appraisal methodology for valuing the real estate for any purpose of valuation, with reference to “Malaysia Valuation Standard” (MVS) produced by the Board of Valuers, Appraisers and Estate Agents and Property Managers Malaysia. Appraisal is the formulating of an opinion of market value of property. This opinion is derived by five main methods of valuation. Appraisal is a way to approach value that includes all the market and property considerations that are part of our framework for analysis. The five approaches to value; sales comparison method, investment method, cost method, profit or income approach and residual method. The first is the most useful when a number of comparable properties can be located. The investment method is useful when the property is rented and easy getting rental comparable. The cost method is useful when the property is new and relies on the principle of substitution. The income approach value of the property is expected to generate profit. While the residual approach is useful for the property has potential value or potential highest and the best use in future. Through assignments and project work, students shall be given the opportunity to develop skills to communicate effectively, to lead and cooperate as team members, be highly motivated, disciplined and ethical.

DDWF 1633: Law of Contract, Agency and Torts

The course is designed to generally introduce the students to contract law, the elements of contract, terms of contract, types of contract, discharge of contract, legal remedies for breach of contract and Islamic contractual transaction. In continuation with the above, students shall be able to differentiate elements of contract under the civil and conventional law and Islamic Law of contract as well. The second part of the course shall focus on the law of agency, the principles that are applicable in an agency and formation of an agency, together with rights and obligations of both the agent and his/her principles and including the third parties as well. The third part of this course shall briefly discuss the law of tort specifically on negligence to accommodate the specific needs of the course for students.

DDWF 2433: Investment Valuation**(Pre-requisite: DDWF 1423)**

This course introduces students to theories and practices in property investment area. It will emphasize on the general concepts of investment, the usage of investment method in determining the capital value or rental of freehold or leasehold properties, rental elements, rates of returns, analysing the investment alternatives and the cash flow techniques in property investment. Students shall also be introduced to REITS as an alternative in property investment. At the end of the course, students should also be able to demonstrate and apply the knowledge by producing a standard valuation report using the investment method and also able to analyze the return of investments within a given portfolio. Through assignments and project works, students are led to develop skills to communicate effectively, to lead and cooperate as team members, be highly motivated, disciplined and ethical.

DDWF 2533: Building Maintenance

This subject consists of introduction to building maintenance management system, cause and defects on building components and materials. It also explains the maintenance approach and functions, plan and develop a maintenance system, building surveys works and procedures, organization of building maintenance management and preventive maintenance.

DDWF 2633: Real Estate Law

The course is designed to introduce students to applicable laws governing the land matters in Malaysia and its close relationships with any type of property development. Students are taught the concept of land, jurisdictions and authorities of concerned parties over land matters. The importance of the Torrens system and understanding the types of commercial transactions created over land by land owners that are currently available and recognized by the National Land Code are also included in this course.

DDWF 2353: Real Estate Management

This course introduces students to some major views, theories and practices in property management. It involves the introduction to the concept and principles of management, the duties, qualification, code of conduct and appointment of a property manager and handing over, the management of real estate, maintenance, financial, administrative, insurance, health, safety and emergency, tenancy and facilities management. It also covers several current issues related to the development of property management practices in Malaysia.

DDWF 2733: Land Information and Land Tenure

This course introduces the structure of the land administration of Malaysia and describes every department's responsibilities under its administration. It focuses on the title record system kept at the Registrar and Land Office, registration of title, different types of land categories and land alienation. It also introduces the basic operation of surveying works which includes the measurement of angles, bearings and distances, traverse and heights, the various computational aspects and problem solving commonly found in engineering surveys. It also shows the various types of survey plans and maps used.

**DDWF 2443: Applied Valuation
(Pre-requisite: DDWF 2433)**

This course covers the determining factors affecting value, data collection and data analysis, application of appropriate methods of valuation for different types of properties, valuation for fire insurance and determining the forced sale value. At the end of this course, students should be able to use and apply their professional knowledge and skills in choosing the appropriate method of valuation when carrying out property valuation according to the type of property while advocating the MVS. Through assignments and project work, students are lead to develop skills to communicate effectively and highly motivated for better self-improvement.

DDWF 2643: Real Estate Development Law

The course is designed to introduce students to the applicable laws in governing the land and property development in Malaysia and the close relationships with the provisions of NLC and the of local council authorities. Students shall be taught the concept of land development, types of land development and other subject matters that are closely linked and affected or shall affect the land development. Various laws, issues and subject matters such as Malay Reserved Land, land acquisition, strata title and land and property developers shall be discussed.

DDWF 2843: Urban Planning and Development Control

This course introduces students to the system of physical planning or land-use planning and the urban planning process and practice in Peninsular Malaysia. Students are exposed to some current environmental issues related to urban planning in the country. It covers the definitions of urban planning, urban planning machinery, urban planning legislations; Town Planning Enactments, Town and Country Planning Act 1976, two-tier planning system of structure plans and local plans, planning permission, planning standards, development charges, and property development process. At the end of the course, students should be able to explain the urban planning practice in Malaysia, relate the urban planning to land matters, calculate development charges on conversion of land-uses and the increase of density, explain the different methods of development control practice in Malaysia such as zoning, density control, plot ratio, plinth area, building lines, set-backs, car parking requirements and others.

DDWF 2143: Introduction to Accounting and Finance

This course introduces students to the principles and the basics of accounting and financial in property management and property valuation. It introduces students to the theory and principles of accounting. Besides that, it will emphasize on the theory and general concepts on financial management. At the end of the course, students should be able to apply the theory and concept of accounting and financial management in real estate profession especially for property management and valuation.

DDWF 2342: Real Estate Marketing Practice

This is an applied marketing course which focused on the contemporary practice of real estate marketing. It covers the marketing fundamentals, consumer behaviour, market segmentation, digital marketing, positioning and targeting, marketing mix and etc. The aim of this course is to relate and apply the concept of marketing in real estate practice. Through assignments and project work, students are led to develop marketing skills and able to communicate effectively.

DDWF 2343: Real Estate Agency Practice

This course is designed to enable students to acquire knowledge of the real estate agency profession. The topics include introduction to the role of a Real Estate Agent (REA); background study; definition based on the VAE 81; the REA profession; the role of the VAE Act and the Board of Valuers, registration and procedure to becoming a registered agent; code of ethics and best practice of a REA; responsibilities and work scope; role and function of REA today; property listing; marketing strategies; consultancy works; closing deals and the legalities and procedures involved with property transactions. At the end of the course, students should be able to demonstrate their understanding on the theory and practice of a real estate agent. The students also should be well versed with the current rules and property market scenario in Malaysia. Through assignments and project work, students are led to develop skills to communicate effectively, to lead and cooperate as team members, be highly motivated, disciplined and ethical.

DDWF 3453: Statutory Valuation**(Pre-requisite: DDWF 2443)**

This subject consists of introduction to statutory valuation; the concepts and basic needs of statutory valuation and the acts or laws which involve in the property valuation. The purpose of statutory valuation is divided into three. Firstly, it is for the taxes purpose that involves rates, stamp duty, real property gains tax. The second purpose is for valuation for compensation of land acquisitions. Finally, it is for valuation for payment of charges and premium such as development charge, premium for alienation of land and conversion of land use. At the end of this course, students should be able to use and apply their professional knowledge and skills in choosing the appropriate method of valuation when carrying out property valuation according to the type of property while advocating the MVS. Through assignments and project work, students are led to develop skills to communicate effectively, to lead and cooperate as team members, be highly motivated, disciplined and ethical.

DDWF 3253: Computer Application in Real Estate
(Pre-requisite: DDWF 2443)

This course introduces students to the basic knowledge of computer aided valuation in property valuation, property management and real estate agency by using Excel and Access applications. This course also introduced students to the drawing method of building plan by using Visio application, and preparing the location plan and site plan by using Google Map. At the end of this course, students should be able to use and apply their knowledge and skills in Excel for property valuation, Access for property management database and real estate agency, and able to use Visio to draw building plans and use Google Map application to prepare location plan and site plan.

DDWF 3053: Economics in Real Estate

This is an applied economic course which emphasis on the introduction to the theory and concepts of land economics and urban land economics. This course consists of Part I (Land Economics) and Part II (Urban Land Economics). The subtopics in Part I are economic land characteristics, structure of property market, property investment, economic return on land, the allocation of land sources, land development, land planning, the role of government in property market etc. In Part II, students shall learn the theory of rental and replacement, Theory of Von Thunen, Theory of Alonso; land value and land use, Urban Structure Theory, factors that affect the land use style, accessibility, complimentarily, land use marketing and replacement; housing, commercial, office and industrial.

DDWF 3742: Introduction to Land Development

This course consists of introduction to general concepts and principles of land development process which includes the land acquisition process, preparation development master plan and land development stages.

DDWF 3252: Statistic for Real Estate Manager

This course consists of introduction to statistics for property manager. Prior to statistics analysis, student should know the concept of sampling theory and the types of statistic and types of data, the theory of data collection, arranging data, presenting the data and analyze the data. The result gained from the data analysis is very important for a property manager in decision-making or for management purpose. Analysis of statistics consists of measuring the central tendency and dispersion, correlation and simple linear regression and multiple regression index. Through assignments and project work, students are led to develop skills to communicate effectively, to lead and cooperate as team members, be highly motivated, disciplined and ethical.

DDWF 3910: Industrial Training

This course consists of practical training in three main areas such as property valuation, property management and real estate agency. Students shall be placed in the related private firms, government sector such as JPPH, local authority (such as DBKL, MBBJ etc.) and others. The purpose of the course: to provide the opportunities for the students to gain knowledge and work experience from the real estate industry. At the end of this course, students should be able to use and apply their professional knowledge and skills in real life practice, as well as produce reports in property valuation, property management and estate agency. Through this course, students are also led to develop skills to communicate effectively, to lead and cooperate as team members, be highly motivated, disciplined and ethical.

PROGRAM SPECIFICATION

1. Programme Name		Diploma in Technology Management		
2. Final Award		Diploma in Technology Management		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Malaysian Qualifications Agency (MQA)		
6. Code of Programme		DDWG		
7. Language(s) of Instruction		Bahasa Melayu and/or English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full-time		
11. Study Duration		Minimum : 6 semester (3 Years) Maximum : 9 semester (4 ½ Years) Part Time: Minimum : 7 semester (3 ½ Years) Maximum : 18 semester (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	14
Short	0	4	-	9

<p>12. Entry Requirement</p>	<p>A) GENERAL UNIVERSITY REQUIREMENTS Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level</p>
	<p>B) SPECIFIC PROGRAMME REQUIREMENTS Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of THREE (3) credits (GRADE C) inclusive of Bahasa Melayu and the following subjects:</p> <ul style="list-style-type: none"> • Mathematics • ONE (1) of the subjects (NOT inclusive of previously listed subjects with credits) <p style="text-align: center;">AND</p> <p>Obtained a pass (GRADE E) in English Language.</p> <p style="text-align: center;"><u>OR</u></p> <p>Obtained qualification from Polytechnic / Kolej Komuniti / Certificate which, relevant with the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.</p> <p style="text-align: center;"><u>OR</u></p> <p>Obtained Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / Certificate which, relevant with Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.</p>

	<p><u>OR</u> Passed O-Level with minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of other subjects.</p> <p><u>OR</u> Any related qualifications awarded by the Malaysia Higher Education</p>
--	--

13. Programme Educational Objectives:

Diploma in Technology Management is designed to produce graduates who:

- a. Competent, creative and innovative in solving various problems in Technology Management related field.
- b. Communicate effectively with leadership skills and self-confidence while striving for career advancement through life-long learning.
- c. Uphold ethical values and contributes to the needs of the organization and society by participating in various related activities.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes(LPO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge and Understanding (KW)	Demonstrate knowledge of Technology Management theoretical and principles, for the solutions of it complex environments of an organization.	Lectures, tutorials, directed reading, internet searching, active and cooperative learning.	Quizzes, tests, assignments, presentations, examinations, industrial training and industrial training report.

PLO2 Cognitive Skills (CG)	Analyze, identify and formulate to the application of the problems solving methodologies of Technology Management issues.	Lectures, tutorials, computer practical classes, cooperative learning and group projects.	Tests, assignments, presentations, examinations, and industrial training.
PLO3 Practical Skills (PS)	Conduct field works and using technology management or related skills.	Project based learning, active and cooperative learning, case studies, problem based learning.	Tests, assignments, presentations, examinations, and industrial training.
(b) Generic Skills			
Programme Learning Outcomes(LPO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO4 Interpersonal Skills (IPS)	Interact effectively and collaboratively in managing relationships in teams and within the organizations.	Individual assignments and group projects.	Project/assignment reports and presentations.
PLO5 Communication Skills (CS)	Communicate effectively and confidently through written, visual and oral presentations to different audiences.	Individual assignments and group projects.	Project/assignment reports, industrial training report and presentations.
PLO6 Digital Skills (DS)	Apply a range of digital applications as well as to seek and process data related to work and studies.	Individual and group projects, directed reading, cooperative learning and discussion.	Individual / group project and assignment reports, academic talk, industrial visits
PLO7 Numeracy Skills (NS)	Use and interpret routine and complex numerical and graphical or visual data in technology management.	Group projects, active and cooperative learning.	Project /assignment reports.
PLO8 Leadership, Autonomy & Responsibility (LAR)	Demonstrate leadership qualities and be able to act as a responsible member of the group towards achieving common goal.	Individual assignments, mini/group projects and laboratory works.	Project /assignment reports, industrial training.

<p align="center">PLO9 Personal Skills (PRS)</p>	<p>Identify self-improvement initiatives and possibilities for career development or further education.</p>	<p>Community service, industrial and students visits, academic talk, cooperative learning, project assignment.</p>	<p>Project /assignment reports, industrial training</p>
<p align="center">PLO10 Entrepreneurial Skills (ENT)</p>	<p>Demonstrate the ability to identify new opportunities in dealing with issues related to technology management field with entrepreneurial mindset.</p>	<p>Group projects, directed reading, internet searching, lectures, active and cooperative learning.</p>	<p>Project /assignment reports.</p>
<p align="center">PLO11 Ethics and Professional Skills (ETS)</p>	<p>Demonstrate the ability to perform tasks and make decisions ethically, professionally and with integrity.</p>	<p>Individual assignments, group/mini projects, cooperative learning and discussion, industrial training.</p>	<p>Project /assignment reports, industrial training report.</p>
<p>15. Total credit hours to graduate</p>		<p align="center">90 credit hours</p>	
<p>16. Programme structures and features, curriculum and award requirements</p>			
<p>The programme is offered in full-time mode and based on a 2 Semester Academic Year with several courses being delivered and assessed in each Semester. Assessment is based on coursework, final examination and practical training and seminar.</p> <p>Assessment (Refer to UTM's Academic Regulations):</p> <ul style="list-style-type: none"> ● Final Examination not more than 50% and coursework not more than 60% ● Passing marks for all courses is 40%. ● Skill acquisition: 100% Industrial Training including industrial report. <p>Award requirements:</p> <ul style="list-style-type: none"> ● Students should achieve a total of 90 credit hours with minimum CPA of 2.00 			

17. Our uniqueness

This programme blends theories and practice which covers the major area of technology management, marketing, commercialization, research development and innovation. The systematic development of innovative thinking and creative problem solving skills is given emphasis in the programme. Students will be trained not only in the specified areas, but also in self-discipline, communication skills and entrepreneurship. Students will gain valuable industry exposure and keep abreast with industry practices via industrial training.

18. Career Prospects

Diploma in Technology Management holders can work as an assistant administrative, line supervisor and assistant executive (administration and operation). The candidates may also continue to further their study in various disciplines such as Bachelor of Management (Technology), Bachelor of Business Administration (Human Resources, Marketing and Operation Management), Bachelor of Economics, Bachelor of Information Technology and Education (Management) at local or foreign universities.

19. UTM Diploma ++ Programme

- AutoCAD Certificate
- Foreign language – Mandarin, Arabic and Japanese
- Career and guidance talks

20. Facilities Available

List of Laboratories:

- a. Computer Laboratory
- b. Language Laboratory
- c. Sheet Metal and Fitting Workshop

21. Support for Students and Their Learning

Personal support

- Academic Advisor
- Counseling

Infrastructure support

- Internet access
- e-learning
- Digital library
- Health care and Recreational

Financial support

- Perbadanan Tabung Pendidikan Tinggi Negara (PTPTN)
- Jabatan Perkhidmatan Awam (JPA)
- Yayasan Negeri
- Pusat Zakat Negeri

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS 1182*/ UHLM 1122*	Appreciation For Ethics And Civilisation / Malay Language For Communication 1	2
UHLB 1032	Introductory Academic English	2
DDWG 1133	Principles of Management	3
DDWG 1413	Principles of Microeconomics	3
DDWP 1013	Business Accounting	3
DDWD 1013	Microcomputer Application	3
TOTAL		16

Note:*Local students register for UHMS while International students register for UHLM.

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS 1012	Value and Identity	2
UHLB 1042	Intermediate Academic English	2
DDWG 1153	Principles of Marketing	3
DDWG 1423	Principles of Macroeconomics	3
DDWG 1213	Technology Management	3
DDWG 1113	Business Mathematics	3
TOTAL		16

YEAR 2 (SEMESTER 3)

Code	Course	Credit
DDWR 3652	Portfolio Design	2
ULRF 2XX2	Service Learning & Community Engagement Courses	2
DDWG 2223	Introduction to Operation Management	3
DDWG 2213	Business Statistics	3
DDWG 2533	Introduction to Finance	3
DDWG 2173	Organizational Behavior	3
TOTAL		16

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWG 2153	Quality Management	3
DDWG 2143	Interpersonal Communication	3
DDWG 2263	Technology Entrepreneurship	3
DDWD 2013	Management Information Systems	3
DDWJ 2733	Manufacturing Process	3
TOTAL		15

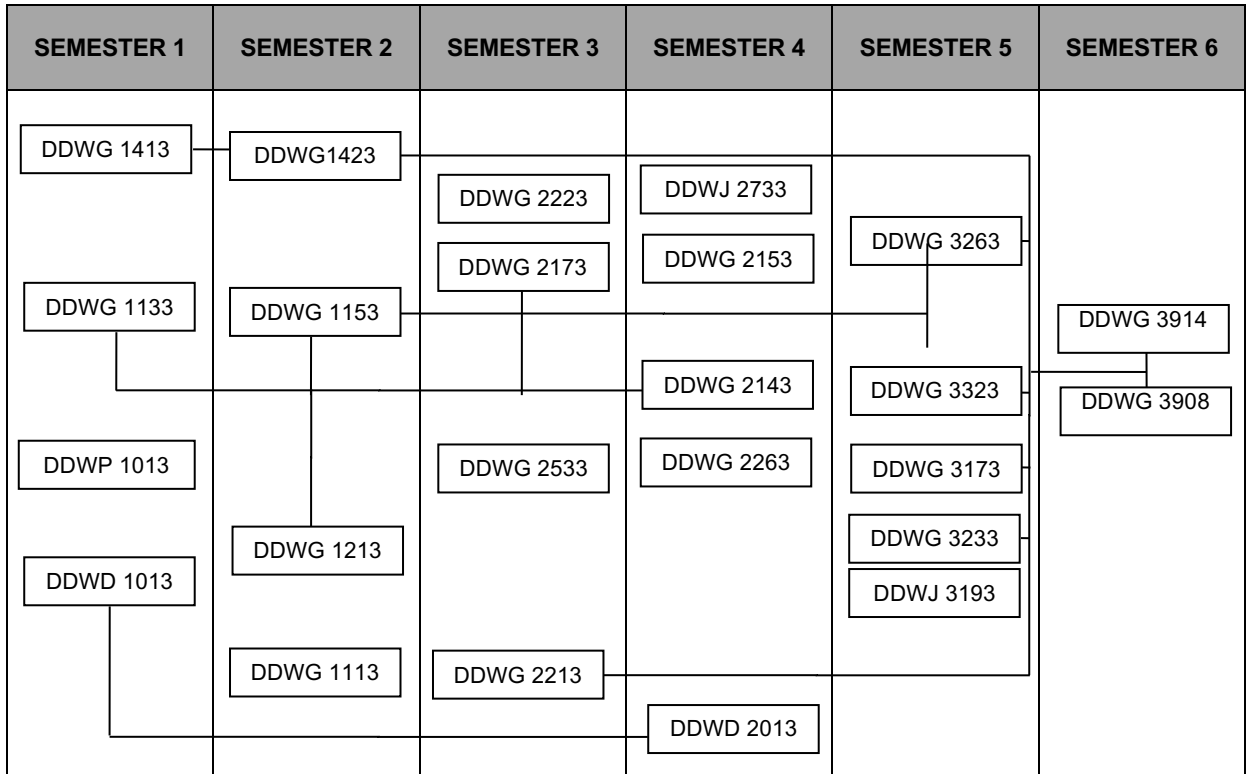
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWJ 3193	Production and Planning Control	3
DDWG 3323	Human Resource Management	3
DDWG 3173	Commercial Law	3
DDWG 3263	Technology Commercialization	3
DDWG 3233	Research Development and Innovation	3
	TOTAL	15

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWG 3908	Industrial Training	8
DDWG 3914	Industrial Training Report	4
	TOTAL	12
	TOTAL CREDITS:	90

**PRE-REQUISITE
DIPLOMA IN TECHNOLOGY MANAGEMENT**



SYNOPSIS OF CORE COURSES

DIPLOMA IN TECHNOLOGY MANAGEMENT

DDWG 1133: Principles of Management

This course is designed to expose students to the management functions in an organization. It introduces students to the concepts relating to management, particularly, planning, organizing, leading, and control. Included are topics such as managerial competencies, trends that affect the management of organizations, human resource management, motivation, and innovation. At the end of the course, students should be able to highlight the importance of communication with managers, and the elements required for an effective presentation.

DDWG 1413: Principles of Microeconomics

This course is designed to expose students to basic concepts of economics that consist of both theories and concepts in microeconomics. It will emphasize the basic human problems as well as basic economic problem. It will discuss on the theory of demand, theory of demand, elasticity of demand and supply, market equilibrium. In addition, the course outlines theory of consumer behavior, theory of production and cost of production, market structures. At the end of the course, students should be able to differentiate the pricing strategies of perfect competition, monopoly market, monopolistic market and oligopoly market.

DDWD 1013: Microcomputer Application

The course discusses on computer system, operating system and Internet at necessary level. The syllabus is primarily added with the learning of selected microcomputer applications (theory and practical) as to equip these groups of student a sufficient degree of computer literacy as to be used throughout their study in University/Colleges.

DDWP 1013: Business Accounting

This course is designed to introduce accounting concepts to students such as accounting equation, double entry system, ledger and journals, types of assets, liabilities and capital. At the end of the course, students should be able to demonstrate and apply knowledge by preparing all common accounts in business, trading and profit and loss report, income statement and statement of financial position. At the end of the course, students should be able to prepare financial statements and perform internal control and check – bank reconciliation and inventory valuation.

DDWG 1423: Principles of Macroeconomics**(Pre-requisite: DDWG 1413)**

This course is designed to expose students to the basic economics level that consist of concepts and theories in macroeconomics. These concepts involve national income accounting, uses and limitations of national income statistics, consumption theory, investment theory, the determination of national income equilibrium, money and banking, monetary policy, fiscal policy, national budget and debt, inflation, unemployment, international trade, balance of payment and exchange rate. At the end of the course, students should be able to apply the concepts in addressing basic macroeconomics issues.

DDWG 1153: Principles of Marketing

This is an introductory course in marketing. The definition of marketing, key marketing concepts, the marketing process, and factors that influence marketing strategies will be explained. Students need to understand major environmental forces that affect marketing and elements of the marketing mix. Students will compare the buying behaviors of final consumers and business customers. They will also look at issues related to international marketing such as the global marketing environment as well as product and promotion strategies.

DDWG 1113: Business Mathematics

This course is design to expose students about the basic concepts, practices and the application of mathematics in their daily activity and businesses. Students need to understand the subject so that they are able to apply the business mathematics concepts in the following subjects such as finances and accounting. At the end of this course, students should gain and able to apply the interest concepts in business mathematics activities. Furthermore, students should be able to differentiate and classifies the trade and cash discount, mark up and markdown, installment payment, and depreciation.

DDWG 1213: Technology Management

This course is designed to introduce students to the basic theories of technology usage in business. It covers the basic concepts of developing, acquiring, and exploiting new and existing technologies. Apply some concepts and tools often used by organization in analyzing technology, innovation and related strategies.

DDWG 2173: Organizational Behavior**(Pre-requisite: DDWG 1153)**

This course is designed to expose students to the concepts and theories in organizational behavior for them to understand human behavior at the workplace. First, students will be introduced to the roles played by individuals in the organization, theories of personality, learning and motivation. Next, they will have the opportunity to understand group dynamics, conflict management, communication and the importance of innovation. Finally, they will learn about inter-group relations from topics such as power, influence, politics and leadership.

DDWG 2213: Business Statistic

This course is design to expose the student the basic knowledge of statistics in the field of business. Besides that, it provides a rich depth of practical examples and application approach by using statistical techniques. This course will also emphasize topics on introduction and data collection, presenting data in tables and charts, numerical descriptive measures, basic probability, normal distribution, sampling distributions, fundamental of hypothesis testing : one-sample tests; two-samples tests with numerical data, analysis of variance, tests for two or more samples with categorical data, simple regression and correlation and index numbers.

DDWG 2533: Introduction to Finance

This subject consists of introduction to financial environment such as firms, investors and markets and the fundamental concepts of finance including interest rates, understanding financial statements, cash flows and its analysis, the time value of money, the meaning and measurement of risk and return. Those fundamentals will be applied in the second part of the course - the valuation of securities for bonds and stocks, determining cost of capital, and capital budgeting: concepts, techniques, calculation of initial cash flow, operating cash flow and terminal cash flow.

DDWG 2223: Introduction to Operations Management

This course is designed to expose the students to the operations function to other functions of the firm. It will focus on the operations of management organization, principles of efficient location, layout and materials handling design in the workplace, method study and work measurement principles to business, design effective planning, scheduling and control systems for various types of manufacturing and service-oriented business and technology used in industry. Students are required to make a visit to a firm or factory as their group project and provide a report upon the visit.

DDWG 2143: Interpersonal Communication

(Pre-requisite : DDWG 1133, DDWG 2173)

This course provides basic training in interpersonal Graduate Success Attributes relevant for human relations and for organizational work. It introduces students to the principles and practices necessary for effective human relations. Students will learn about the process of human interaction, and they have the opportunity to integrate theory and the new skills they have acquired. In a nutshell, this course will enable students to understand the role of interpersonal communication in the formation of self-concept, self-esteem, and self-image.

DDWG 2153: Quality Management

This course discusses on the concept and methodology of Quality Management. The course outline the principles of quality management as well as quality tools and techniques used for quality control and quality improvement. Topics covered include quality culture, ethics, corporate social responsibility, quality principles such as customer focus, leadership, teamwork, quality education and training, partnering as well as statistical quality control tools and techniques. The course is designed to facilitate students acquiring knowledge and understanding on principles of quality management and methodology for quality control and improvement. This course embraces authenticity of generic skills (team work) when engaging in the process of completing the task given.

DDWG 2263: Technology Entrepreneurship

This course introduces students the basic concepts of technology entrepreneurship as well as the process of creating new technology based ventures. Specifically, the coverage includes opportunity recognition process, legal forms of businesses, options in setting up technology-based ventures, planning and arranging for resources to set up new ventures and financing options for new ventures. At the end of this course, student will be able to develop business plan.

DDWJ 2733: Manufacturing Process

This subject consists of introduction to manufacturing processes, common aspect in manufacturing, metal casting, bulk metal forming, sheet metal forming, forming of polymer, machining operations, non-traditional machining, joining processes, and the latest and competitive environments in manufacturing. Upon completion of the course, students should be able to recommend suitable part manufacturing processes when provided a set of functional requirements and product development constraint.

**DDWD 2013: Management Information System
(Pre-requisite DDWD 1013)**

This course is designed to expose the students who wanted an in-depth look at how today's business firms use information technologies and system to achieve corporate objectives. Information system are one of the major tools available to business managers for achieving operational excellence, developing new product and services improving decision making and achieving competitive advantage. Students will find here the most up-to-date and comprehensive overview of information systems used by business today. At the end of this course, student should be able to demonstrate and apply knowledge in the building information system using any database software within a time frame. The students should also be able to acquire and managing MIS development project for end user from various sources to accomplish an assigned project.

DDWJ 3193: Production and Planning Control

This subject will emphasize main activities of production planning and control such as forecasting, capacity planning, inventory management, aggregate planning, material requirement planning, short term planning, project management and maintenance management. Upon completion of the course, students should be able to explain the aspects of production and productivity in manufacturing and services sector.

DDWG 3323: Human Resource Management

(Pre-requisite: DDWG 1133, DDWG 2173)

This course introduces students to strategies for managing people in the workplace, via the theory and practice of human resource management (HRM). The course provides an overview of the key functions undertaken by managers with responsibility for effectively utilizing and retaining an organization's human resources. Functions such as recruitment and selection, training and development, performance management and compensation are examined. At the end of the course, students will be able to demonstrate and apply the knowledge in this area by preparing a report on relevant topics and suggest solutions regarding the HRM practices in various organizations.

DDWG 3173: Commercial Law

This course is designed to expose students to the business laws that are available in Malaysia. As a basis, it shall briefly focus on the definition of law, roles and functions and types of laws. It shall focus too on the process of law making by the legislative bodies in Malaysia, its procedures, the roles of the Malay Rulers before a law could be implemented. The second part of this course will concentrate on contract law, the elements of contract, terms of contract, types of contract, discharge of contract, legal remedies for breach of contract, Islamic contractual transaction. The course will introduce to students several types of commercial transactions laws that are available namely the insurance law, sale of goods law, hire purchase law. Characters, requirements of each commercial law transactions above would be discussed to enable students to understand its significance and differences.

DDWG 3233: Research Development and Innovation

This course aims to extend the understanding of critical issues and conceptual frameworks involved in the management of R&D innovation and activities. It provides the skills of innovation management, R&D and new product development (NPD) activities at operational level.

DDWG 3263: Technology Commercialization

This course provides an overview of social scientific research on the organizational contexts, processes and outcomes of technology commercialization. It focuses on how the commercialization of technology involves fundamental knowledge into commercial application.

DDWG 3908: Industrial Training

This course requires the students to apply all technical and soft-skills knowledge that have been thought throughout the study years. The students will be exposed to real working environment and practice their communication skills in order to solve real problems.

DDWG 3914: Industrial Training Report

This course requires the students to produce a report on the industrial training carried out by them. The report will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or department. After completing the report, the students should be able to present information and express ideas clearly, effectively and confidently.

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Accounting		
2. Final Award		Diploma in Accounting		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Malaysian Qualifications Agency (MQA)		
6. Code of Programme		DDWP		
7. Language(s) of Instruction		Bahasa Melayu and/or English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full-time		
11. Study Duration		Full time: Minimum : 6 semester (3 Years) Maximum : 9 semester (4 ½ Years) Part Time: Minimum : 8 semester (4 Years) Maximum : 18 semester (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	14
Short	0	4	0	9

12. Entry Requirement

A) GENERAL UNIVERSITY REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC PROGRAMME REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of **THREE (3) credits (GRADE C)** inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- **ONE (1)** of the subjects (NOT inclusive of previously listed subjects with credits)

AND

Obtained a pass (**GRADE E**) in English Language.

OR

Obtained qualification from Polytechnic / Kolej Komuniti / Certificate which, relevant with the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Obtained Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / Certificate which, relevant with Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Passed O-Level with minimum **THREE (3) credits (GRADE C)** inclusive of Mathematics and **TWO (2)** of other subjects.

	<p><u>OR</u></p> <p>Any related qualifications awarded by the Malaysia Higher Education</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> • <i>Candidates for Diploma in Accounting programme with Certificate and O-Level must obtain a minimum credit (GRADE C) for Mathematics and passed (GRADE E) in English Language at the SPM level or equivalent</i>
--	--

13. Programme Educational Objectives:

Diploma in Accounting is designed to produce graduates who:

- i. Competent and innovative in applying accounting knowledge towards assisting superiors in accounting and accounting-related fields.
- ii. Communicate effectively with leadership skills and self-confidence while striving for career advancement through life-long learning.
- iii. Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
<p>PLO1 Knowledge and Understanding (KW)</p>	<p>Incorporate knowledge of accounting, finance and business management, theoretical and principles, in assisting management to make economic decision making.</p>	<p>Lectures, Tutorials, Directed Reading, Internet Searching, Active Cooperative Learning and Industrial Training.</p>	<p>Quizzes, Tests, Assignments, Presentations, Examinations, Industrial Training and Industrial Training Report.</p>

PLO2 Cognitive Skills (CG)	Apply accounting, finance and business management knowledge in planning, problem solving and decision making.	Lectures, Tutorials, Directed Reading, Internet Searching, Active Cooperative Learning and Industrial Training.	Quizzes, Tests, Assignments, Presentations, Examinations, and Industrial Training.
PLO3 Practical Skills (PS)	Demonstrate skills and abilities in solving accounting, finance and business management problems.	Lectures, Tutorials, Computer Practical Classes, Cooperative Learning and Industrial Training.	Quizzes, Tests, Assignments, Computer Practical, Examinations, and Industrial Training.
(b) Generic Skills			
Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO4 Interpersonal Skills (IPS)	Interact effectively and collaboratively in managing relationships in teams and within the organizations.	Active and Cooperative Learning, and Project-based / Case Studies.	Assignments, Presentations and Project Reports.
PLO5 Communication Skills (CS)	Communicate effectively in oral or written with various stakeholders and all levels of society.	Cooperative Learning and Discussions, and Industrial Training	Assignments, Presentations and Industrial Training Report & Presentation.
PLO6 Digital Skills (DS)	Apply a range of digital applications as well as to seek and process data related to work and studies.	Cooperative Learning and Discussions, Internet Searching, and Industrial Training.	Assignments, Presentations, Industrial Training and Industrial Training Report.
PLO7 Numeracy Skills (NS)	Use and interpret routine and complex numerical and graphical/visual data in accounting, finance and business management.	Directed Reading, Internet Searching, Active and Cooperative Learning.	Assignment Reports and Presentations.

<p align="center">PLO8 Leadership, Autonomy & Responsibility (LAR)</p>	<p>Demonstrate leadership qualities and be able to act as a responsible member of the group towards achieving common goals.</p>	<p>Supervised Learning, Discussions, Active and Cooperative Learning.</p>	<p>Assignment Reports and Presentations.</p>
<p align="center">PLO9 Personal Skills (PRS)</p>	<p>Identify self-improvement initiatives and possibilities for career development or further education.</p>	<p>Active and Cooperative Learning and Industrial Training.</p>	<p>Assignments and Industrial Training.</p>
<p align="center">PLO10 Entrepreneurial Skills (ENT)</p>	<p>Demonstrate the ability to identify new opportunities in dealing with issues related to accounting, finance and business management field with an entrepreneurial mindset.</p>	<p>Active and Cooperative Learning, Project-based and Industrial Training.</p>	<p>Assignments, Business Plan and Industrial Training Report.</p>
<p align="center">PLO11 Ethics and Professionalism Skills (ETS)</p>	<p>Demonstrate the ability to perform tasks and make decisions ethically, professionally and with integrity.</p>	<p>Directed Reading, Internet Searching, Active and Cooperative Learning and Industrial Training.</p>	<p>Assignments and Industrial Training.</p>
<p>15. Total credit hours to graduate</p>		<p align="center">90 credit hours</p>	
<p>16. Programme structures and features, curriculum and award requirements</p>			
<p>The programme is offered in full-time mode and based on a 2 Semester Academic Year with several courses being delivered and assessed in each Semester. Assessment is based on coursework, final examination, practical training, and practical training report.</p> <p>Assessment (Refer to UTM's Academic Regulations):</p> <ul style="list-style-type: none"> ● Final Examination not more than 50% and coursework not more than 60% ● Passing marks for all courses is 40%. ● Skill acquisition: 100% Industrial Training including industrial report. 			

Award requirements:

- Students should achieve a total of **90** credit hours with a minimum CPA of 2.00

17. Our uniqueness

Diploma in Accounting students will undergo four months of Industrial Training at a local or established accounting firm or audit firm to expose them to actual experience working as assistant accountants, and/or assistant auditors, and/or tax assistants. In addition, the exposure to Industrial Training can qualify them for employment in the public or private sector.

18. Career Prospects

Diploma in Accounting holders can work as account, audit, or tax assistant and management trainees. The candidates may also continue to further their study in various disciplines such as Bachelor of Accounting, Bachelor of Accounting Information System, Bachelor of Education (Accounting), Bachelor of Management (Technology), Bachelor of Business Administration, Bachelor of Finance, Bachelor of Economics. Candidates may also pursue Applied Skills modules in ACCA Courses.

19. UTM Diploma++ Programme

Students are given an opportunity to enroll in short courses offered by the university during studies or semester breaks such as Professional Certificate and Accounting software.

20. Facilities available

- i. Computer Laboratory (Accounting Software)
- ii. Language laboratory

21. Support for Students and Their Learning

Personal support

- Academic Advisor
- Counseling

Infrastructure support

- Internet access
- e-learning
- Digital library
- Health care and Recreational

Financial support

- Perbadanan Tabung Pendidikan Tinggi Negara (PTPTN)
- Jabatan Perkhidmatan Awam (JPA)
- Yayasan Negeri
- Pusat Zakat Negeri

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS1182*/ UHLM1122*	Appreciation for Ethics and Civilisation/ Malay Language for Communication 1	2
UHLB 1032	Introductory Academic English	2
DDWG 1133	Principles of Management	3
DDWG 1153	Principles of Marketing	3
DDWG 1413	Principles of Microeconomics	3
DDWP 1113	Financial Accounting 1	3
Total		16

Note:*Local students register for UHMS while International students register for UHLM.

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS 1012	Value and Identity	2
UHLB 1042	Intermediate Academic English	2
DDWG 1113	Business Mathematics	3
DDWG 1423	Principles of Macroeconomics	3
DDWP 1123	Financial Accounting 2	3
DDWP 1313	Computer Application in Accounting	3
Total		16

YEAR 2 (SEMESTER 3)

Code	Course	Credit
UKQF 2XX2	Co-curriculum Service Learning	2
DDWR 3652	Design Portfolio	2
DDWG 2213	Business Statistics	3
DDWP 2133	Management Accounting	3
DDWP 2213	Financial Management	3
DDWP 2323	Accounting Information Systems	3
	Total	16

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWG 2143	Interpersonal Communication	3
DDWP 2143	Intermediate Accounting	3
DDWP 2413	Business Law	3
DDWP 2513	Taxation 1	3
DDWP 2613	Audit 1	3
	Total	15

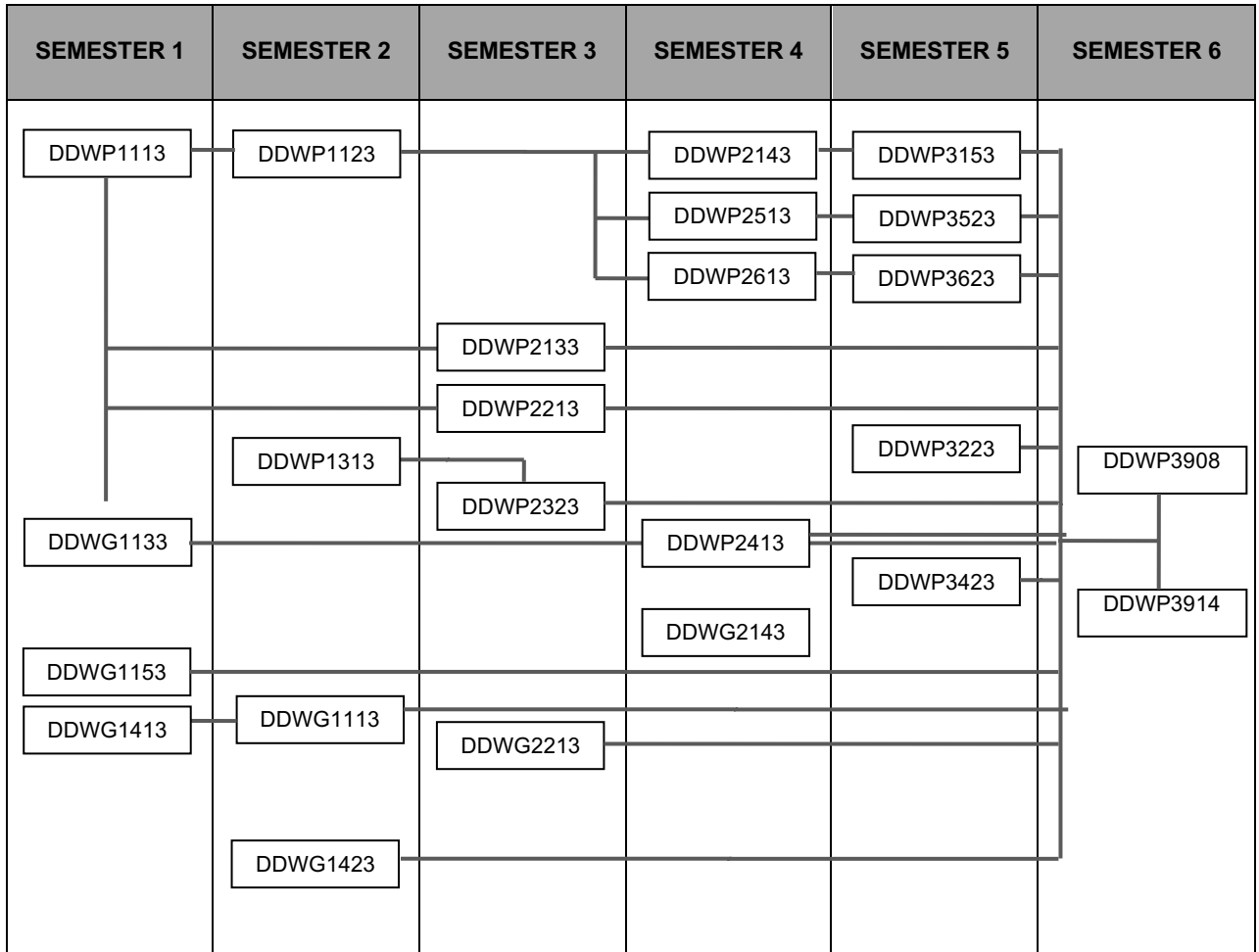
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWP 3153	Advanced Financial Accounting	3
DDWP 3223	Islamic Financial System	3
DDWP 3423	Partnership and Company Law	3
DDWP 3523	Taxation 2	3
DDWP 3623	Audit 2	3
	Total	15

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWP 3908	Industrial Training	8
DDWP 3914	Industrial Training Report	4
Total		12
Total Credits		90

**PRE-REQUISITE
DIPLOMA IN ACCOUNTING**



SYNOPSIS OF CORE COURSES

DIPLOMA IN ACCOUNTING

DDWG 1133 : Principles of Management

This course is designed to expose students to the management functions in an organization. It introduces students to the concepts relating to management, particularly, planning, organizing, leading, and control. Included are topics such as managerial competencies, trends that affect the management of organizations, human resource management, motivation, and innovation. At the end of the course, students should be able to highlight the importance of communication with managers, and the elements required for an effective presentation.

DDWG 1153 : Principles of Marketing

This course provides an overview of an introductory course in marketing. The definition of marketing, key marketing concepts, the marketing process, and factors that influence marketing strategies will be explained. Students need to understand major environmental forces that affect marketing and elements of the marketing mix. Students will compare the buying behaviors of final consumers and business customers. They will also look at issues related to a marketing channel, integrated marketing communication as well as product and promotion strategies. At the end of this course, students will be able to develop a set of the marketing plan.

DDWG 1413 : Principles of Microeconomics

This course is designed to expose students to the basic concept of economics which consist of both theories and concepts in microeconomics. It will emphasize the basic human problems as well as basic economic problems. It will discuss the theory of demand, the theory of demand, the elasticity of demand and supply, and market equilibrium. In addition, the course outlines a theory of consumer behavior, theory of production and cost of production, and market structures. At the end of the course, students should be able to differentiate the pricing strategies of perfect competition, monopoly market, monopolistic market, and oligopoly market.

DDWP 1113 : Financial Accounting 1

This course is designed to introduce accounting concepts and assumptions to students such as accounting equations, double entry system, ledger and journals, types of assets, liabilities and capital. It also includes the accounting treatment and reporting of year-end adjustments for accruals and prepayments, bad debts and allowance for doubtful debts, and depreciation and accumulated depreciation of non-current assets. At the end of the course, students should be able to demonstrate and apply knowledge by preparing all common accounts in business, trading and profit and loss report, statement of profit or loss, and statement of financial position.

DDWG 1113 : Business Mathematics

This course is designed to expose students to the basic concepts, practices, and the application of mathematics in their daily activities and businesses. Students need to understand the subject so that they are able to apply the business mathematics concepts in the following subjects such as finances and accounting. At the end of this course, students should gain and be able to apply the interest concepts in business mathematics activities. Furthermore, students should be able to differentiate and classifies the trade and cash discount, mark up and markdown, installment payment, and depreciation.

**DDWG 1423 : Principles of Macroeconomics
(Pre-requisite DDWG 1413)**

This course is designed to expose students to the basic economics level that consists of concepts and theories in macroeconomics. These concepts involve national income accounting, uses and limitations of national income statistics, consumption theory, investment theory, the determination of national income equilibrium, money, and banking, monetary policy, fiscal policy, national budget and debt, inflation, unemployment, international trade, the balance of payment and exchange rate. At the end of the course, students should be able to apply the concepts in addressing basic macroeconomics issues.

**DDWP 1123 : Financial Accounting 2
(Pre-requisite DDWP 1113)**

This course serves as a continuation of Financial Accounting 1. Topics covered are accounting for internal control and check–bank reconciliation, inventory valuation, control accounts, correction of errors, and incomplete records. It also includes the introduction to a financial reporting entity in various types of business organizations, emphasizing the financial statement for clubs, manufacturing entities, branch accounts, partnerships - revaluation of partnership assets and partnership dissolution. At the end of the course, students should be able to prepare financial statements for both non-profit-oriented organizations and profit-oriented organizations.

DDWP 1313 : Computer Application in Accounting

This course is designed to introduce students to basic skills in computer usage. Students will be taught computer concepts and the uses of general applications such as Microsoft word, excel, access, and power points in accounting work. At the end of the course, students should be able to apply computer applications in accounting.

DDWG 2213 : Business Statistics

This course is designed to expose the student to the basic knowledge of statistics in the field of business. Besides that, it provides a rich depth of practical examples and application approaches by using statistical techniques. This course will also emphasize topics on introduction and data collection, presenting data in tables and charts, numerical descriptive measures, basic probability, normal distribution, sampling distributions, fundamentals of hypothesis testing: one-sample tests; two-samples tests with numerical data, analysis of variance, tests for two or more samples with categorical data, simple regression and correlation, and index numbers. At the end of the course, students should be able to solve problems related to business statistics.

**DDWP 2133 : Management Accounting
(Pre-requisite DDWP 1113)**

This course is designed to provide basic knowledge about management accounting. It will cover various topics including cost terms, concepts, cost behavior, and cost analysis. The analysis includes variance analysis, BEP, product costing, product pricing, profit planning, budgeting, and performance evaluation. At the end of the course, students should be able to identify the relevant and irrelevant costs and benefits to make a decision.

DDWP 2213 : Financial Management

This course consists of an introduction to the financial environment such as firms, investors, and markets and the fundamental concepts of finance including interest rates, understanding financial statements, cash flows and their analysis, the time value of money, the meaning and measurement of risk and return and working capital management. At the end of this course, students should be able to apply these fundamentals in the valuation of securities for bonds and stocks, determining the cost of capital, and performing capital budgeting.

**DDWP 2323 : Accounting Information System
(Pre-requisite DDWP 1113 & DDWP 1313)**

This course is designed to introduce students to the environment in accounting information systems (AIS). Students will be taught about threats and controls, reliable systems, computer fraud, and system development in AIS. This course will focus on two cycles, the revenue cycle, and expenditure cycle as examples of AIS applications. At the end of the course, students should be able to apply AIS knowledge and skills using accounting software.

**DDWG 2143 : Interpersonal Communication
(Pre-requisite DDWG 1133)**

This course provides basic training in interpersonal Graduate Success Attributes relevant to human relations and organizational work. It introduces students to the principles and practices necessary for effective human relations. Students will learn about the process of human interaction, and they have the opportunity to integrate theory and the new skills they have acquired. In a nutshell, this course will enable students to understand the role of interpersonal communication in the formation of self-concept, self-esteem, and self-image.

DDWP 2143 : Intermediate Accounting
(Pre-requisite DDWP 1123)

This course is designed to provide in-depth knowledge about the accounting and financial reports for companies, especially on the statement of comprehensive income and statement of financial position. It also covers important items on assets liabilities and equities. This course also will discuss issues on recognition of revenue and preparation of cash flow. At the end of the course, students should be able to produce recognized accounting figures in accounting reports.

DDWP 2413 : Business Law

This course is designed to expose students to the business laws that are available in Malaysia. As a basis, it shall briefly focus on the definition of law, roles, and functions, types of laws, the process of law-making by the legislative bodies of Malaysia, its procedures, and the roles of the Malay Rulers before a law could be implemented. The course shall concentrate on contract law, the elements of the contract, terms of the contract, types of contract, discharge of contract, legal remedies for breach of contract, Islamic contractual transaction, and types of commercial transactions laws that are available namely the insurance law, sale of goods law, hire purchase law. At the end of the course, students should be able to present solutions to the relevant business legal problems.

DDWP 2513 : Taxation 1
(Pre-requisite DDWP 1123)

This course is designed to expose the student to every detailed aspect of personal taxation in Malaysia. It will focus on types of taxable income such as business income, employment income, unearned revenue, types of relief and rebate, and status of residents. Besides that, this course also introduces some theories on the administration of taxation in Malaysia. This course will also emphasize topics on business income and business expenses for sole-proprietor. At the end of the course, students should be able to apply the theory and prepare personal taxation to arrive at tax payable for each related year of assessment.

DDWP 2613 : Audit 1
(Pre-requisite DDWP 1123)

This course introduces students to theories, procedures, and the application of auditing in an organization. Topics covered are an introduction to auditing, appointment, powers, and responsibilities of auditors, ethical conduct of work, audit planning, audit evidence, audit procedures and working papers, determination of materiality and risk and assessing internal control of an organization, audit sampling methods, verification of assets and liabilities, reviewing subsequent events, preparation of audit report and effect of information technology on auditing. At the end of the course, students should be able to apply concepts and processes of auditing in making decisions.

DDWP 3153 : Advanced Financial Accounting
(Pre-requisite DDWP 2143)

This course is designed to enable students to acquire basic skills in company accounting. Topics covered include the application of accounting entries for business combination (by amalgamation or absorption), business conversion (to a company), and business reconstruction (internal or external). At the end of the course, the student should be able to prepare and present consolidated financial statements of a holding company.

DDWP 3223 : Islamic Financial System

This course covers economic and financial systems, market, function and Islamic economic and financial system structure, riba', comparison between interest and riba', classifications of riba', the concept of riba in bay' contract and qard, justification for the existence of riba', history of riba', riba' in the Quran and Sunnah, analysis of the forbiddance of riba', controversial issues regarding riba', Islamic banking, Islamic financial instruments, Islamic equity market, equity and loan financing, Islamic financial institutions such as Tabung Haji, Bank Islam, Interest-free Banking System, Takaful, and Al-Rahn Scheme. At the end of the course, students should be able to apply Islamic financial products to the accounting treatment emphasizing Zakat.

DDWP 3423 : Partnership & Company Law

The course is designed to generally introduce students to types of business organizations that could be formed as business generating profit tools that are available in Malaysia. Students shall study the nature of a partnership, how to form a partnership, the limitations in numbers of partners, relationships between partners in a partnership and with the firm, rights of a partner, liabilities of partners in a partnership, dissolution of a partnership. The second part of this course shall discuss focus on company law, differences between a company and a partnership, cooperation, foundation, and subsidiary. Students shall be exposed to the advantages of setting up a company, the nature of a company, and its rights and liabilities. At the end of the course, students should be able to present solutions to the relevant partnership and company legal problems.

DDWP 3523 : Taxation 2
(Pre-requisite DDWP 2513)

In this course, students will be exposed to the taxation of partnerships and companies in Malaysia. They will learn how to calculate tax for partnerships and also the company's taxation structure. The structure of the company's taxation included topics such as industrial building allowance, basis period and change of accounting date, and tax administration for the company in Malaysia. Besides that, the students will be exposed to other topics namely controlled sales, dividend and tax imputation system, sales tax and service tax, and real property gains tax. At the end of the course, students should be able to perform computation on partnership and company tax.

DDWP 3623 : Audit 2**(Pre-requisite DDWP 2613)**

This course is a continuation of Audit I. It intends to strengthen and enhance the students' understanding of auditing. Among the topics that will be discussed are the code of ethics, auditors' liability and in-depth explanations on analytical procedures, computer-assisted audit techniques (CAATs), audit sampling, materiality and audit risk, group audit, and current issues facing the auditing profession. At the end of the course, students should be able to justify other' activities that financial statement audit can be performed by a public accountant like operational audit, compliance audit, and internal audit.

DDWP 3908 : Industrial Training

This course requires the students to apply all knowledge that has been taught and generic skills gained throughout the study years. Students will undergo industrial training for four (4) months period. Students will be exposed to the real working environment and practice their relevant skills in order to solve real accounting and accounting-related problems.

DDWP 3914 : Industrial Training Report

This course requires the students to produce a report on the industrial training carried out by them. The report will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or departments. After completing the report, the students should be able to present information and express ideas clearly, effectively, and confidently.

PROGRAM SPECIFICATION

1. Programme Name		Diploma in Islamic Studies Education		
2. Final Award		Diploma in Islamic Studies Education		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Malaysian Qualifications Agency (MQA)		
6. Code of Programme		DDWI		
7. Language(s) of Instruction		Bahasa Melayu and/or English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full-time / Part Time		
11. Study Duration		Minimum : 6 semester (3 Years) Maximum : 9 semester (4 ½ Years) Part Time: Minimum : 7 semester (3 ½ Years) Maximum : 18 semester (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	14
Short	0	4	-	9

12. Entry Requirement

A) GENERAL UNIVERSITY REQUIREMENTS

Obtained a pass in Sijil Pelajaran Malaysia (SPM)/ equivalent, with a minimum of **FIVE (5)** credits (**GRADE C**) inclusive of Bahasa Melayu / Bahasa Malaysia and a pass in History at the SPM level.

B) SPECIFIC PROGRAMME REQUIREMENTS

Fulfilled the General University Requirements and passed with credits (**Grade C**) in any **FOUR (4)** of the following subjects:

- Tasawwur Islam
- Pendidikan Al-Quran dan As-Sunnah
- Pendidikan Syariah Islamiah
- Pendidikan Islam
- Bahasa Arab*
- Sains
- Bahasa Inggeris
- Ekonomi Asas
- Prinsip Akaun
- Fizik
- Kimia
- Biologi
- Matematik
- Matematik Tambahan

*Candidate without a minimum credit in Arabic Language or who does not take Arabic Language subject at SPM level, is required to undergo Arabic Language enhancement course offered by UTM and **PASS** the course.

	<p style="text-align: center;"><u>OR</u></p> <p>Obtain a certificate from Polytechnic/equivalent that is relevant to the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.</p> <p style="text-align: center;"><u>OR</u></p> <p>Obtain a pass in Sijil Tinggi Agama Malaysia (STAM) by obtaining a minimum Maqbul.</p> <p style="text-align: center;"><u>OR</u></p> <p>Obtain a pass in Sijil Tinggi Pelajaran Malaysia (STPM) with at a minimum a PASS in Syariah / Usuluddin.</p> <p style="text-align: center;"><u>OR</u></p> <p>For a candidate with work experience relevant to the Diploma programme offered, admission through APEL (A) may be considered.</p>
--	--

13. Programme Educational Objectives:

Diploma in Islamic Studies Education shall produce graduates who are:

- a. Competent, creative and innovative in solving various problems in the field of Islamic Studies.
- b. Communicate effectively with leadership skills and self-confidence while striving for career advancement through life-long learning.
- c. Uphold ethical values and contributes to the needs of the organization and society by participating in various related activities.

14. Programme Learning Outcomes (PLO)			
(a) Technical Knowledge and Competencies			
Programme Learning Outcomes(LPO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge and Understanding (KW)	Demonstrate the knowledge in the field of Islamic Studies as an educator or in other related professions.	Lectures, online forum discussion, cybergogy, authentic, blended, active, and cooperative learning.	Quizzes, tests, assignments, presentations, examinations, lesson plans, and practicum.
PLO2 Cognitive Skills (CG)	Apply knowledge in the field of Islamic studies education to solve related problems.	Lectures, online forum discussion, cybergogy, mini-scale research	Tests, assignments, projects, examinations, and practicum.
PLO3 Practical Skills (PS)	Apply practical skills in the field of education in Islamic studies.	Laboratory work, cybergogy, tutorials, active and cooperative learning, case studies, and project-based learning.	Laboratory report, debate simulation, presentations, projects, and practicum.
(b) Generic Skills			
Programme Learning Outcomes(LPO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO4 Interpersonal Skills (IPS)	Interact effectively and collaboratively in managing relationships in teams and within the organizations.	Assignments, group discussion, and group projects.	Project/assignment reports and presentations.
PLO5 Communication Skills (CS)	Communicate effectively in oral or written with various stakeholders and all levels of society.	Mini project, collaboration assignment, active and cooperative learning, presentations, and project-based learning.	Project/assignment reports, presentations, writing tests, self-reflections.

PLO6 Digital Skills (DS)	Apply a range of digital applications to seek and process data related to work and studies.	Cybergogy, laboratory works, and task-based learning.	Project and assignment reports.
PLO7 Numeracy Skills (NS)	Use a combination of numerical and graphical data in completing relevant tasks.	Problem-solving assignments.	Tutorials and assignment reports.
PLO8 Leadership, Autonomy & Responsibility (LAR)	Demonstrate leadership qualities and be able to act as a responsible member of the group towards achieving a common goal.	Active and cooperative learning.	Project /assignment reports, and peer review report.
PLO9 Personal Skills (PRS)	Identify self-improvement initiatives and possibilities for career development or further education.	Case study, cooperative learning, mini scale study.	Presentations, literature review, report writing.
PLO10 Entrepreneurial Skills (ENT)	Demonstrate the ability to identify new opportunities in dealing with issues related to Islamic studies with an entrepreneurial mindset.	Service learning, field-work, active and cooperative learning.	Business model
PLO11 Ethics and Professional Skills (ETS)	Demonstrate the ability to perform tasks and make decisions ethically, professionally and with integrity.	Case study, collaborative-based project, reports.	Reflection, project reports, presentations, and practicum.
15. Total credit hours to graduate	92 credit hours		
16. Programme structures and features, curriculum and award requirements			
<p>The programme is offered in full-time mode and based on a 2 Semester Academic Year with several courses being delivered and assessed in each Semester. Assessment is based on coursework, final examination and teaching practicum.</p> <p>Assessment (Refer to UTM's Academic Regulations):</p> <ul style="list-style-type: none"> • Final Examination not more than 50% and coursework not more than 60% • Passing marks for all courses is 40%. 			

- Skill acquisition: 100% Practicum including practicum report.

Award requirements:

- Students should achieve a total of **92** credit hours with minimum CPA of 2.00

17. Our uniqueness

This programme blends theories and practice, and covers the major area of education and Islamic studies, commercialization, research development, and innovation. This programme produces graduates who are more skilled in the field of Islamic studies and equipped with Computer Science and Basic Multimedia Education courses that are relevant in the field of education profession.

18. Career Prospects

Diploma in Islamic Studies Education holders' can work as an Teaching assistant in Primary/Islamic School and assistant executive (Islamic administration and finance). The candidates may also continue to further their study in various disciplines such as Bachelor of Islamic Studies / Education, Bachelor of Business Administration, and Bachelor of Muamalat Management at local or foreign universities.

19. UTM Diploma ++ Programme

- Teaching Certificate
- Foreign language – Mandarin, Arabic and Japanese
- Career and guidance talks

20. Facilities Available

List of Laboratories:

- d. Computer Laboratory
- e. Language Laboratory

21. Support for Students and Their Learning

Personal support

Academic Advisor

Counseling

Infrastructure support

Internet access

e-learning

Digital library

Health care and Recreational

Financial support

Perbadanan Tabung Pendidikan Tinggi Negara (PTPTN)

Jabatan Perkhidmatan Awam (JPA)

Yayasan Negeri

Pusat Zakat Negeri

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS 1012	Value and Identity	2
UHLB 1032	Introductory Academic English	2
DDWI 1012	Educational Philosophy	2
DDWI 1022	Principles of Islamic Jurisprudence I	2
DDWI 1032	Arabic Grammar I	2
DDWI 1042	Jawi and Islamic Calligraphy	2
DDWI 1052	Al-Quran Memorization	2
DDWD 1003	Computer System and Applications	3
TOTAL		17

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS 1182*/ UHLM 1122*	Appreciation For Ethics and Civilisation / Malay Language for Communication 1	2
UHLB 1042	Intermediate Academic English	2
DDWI 1062	Educational Psychology	2
DDWI 1072	Fundamental of Pedagogy	2
DDWI 1082	Principles of Islamic Jurisprudence II	2
DDWI 1092	Fiqh Ibadah	2
DDWD 1023	Information Technologist and Communication Application	3
TOTAL		15

Note: *Local students register for ULRS while international students register for UHLM.

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULRF 2XX2	Service Learning & Community Engagement Course	2
DDWI 2102	Measurement and Evaluation in Education	2
DDWI 2112	Islamic Faith	2
DDWI 2122	Fiqh Muamalat	2
DDWI 2132	Arabic Grammar II	2
DDWI 2142	Arabic Language Teaching Methods	2
DDWI 2152	Methods of Teaching Islamic Education	2
DDWD 2033	Teaching and Learning Technology	3
TOTAL		17

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWI 2162	Educational Sociology	2
DDWI 2172	Introduction to Ulum Quran	2
DDWI 2182	Introduction to Ulum Hadis	2
DDWI 2192	Fiqh Sirah	2
DDWI 2202	Fiqh Jinayat	2
DDWI 2212	Islamic Morals	2
DDWI 2222	Maharat Al-Qur'an	2
DDWD 2043	Introduction to Multimedia	3
TOTAL		17

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWI 3232	Guidance & Counselling	2
DDWI 3242	Arabic Grammar III	2
DDWI 3252	Introduction to Islamic Da'wah	2
DDWI 3262	Verses and Hadith Related to Legislation	2
DDWI 3272	Fiqh Mirath	2
DDWI 3282	Islamic Civilisational Heritage in the Malay World	2
DDWI 3291	Micro Teaching	1
DDWD 2053	Information Management System in Education	3
TOTAL		16

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWI 3308	Practicum	8
TOTAL		8
TOTAL CREDITS:		90

**PRE-REQUISITE
DIPLOMA IN ISLAMIC STUDIES EDUCATION**

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6
UHLB 1032	UHLB 1042				
UHIT 1022	UHMS 1182 / UHLM 1122	UKQx 2xx2			
	UHMT 1012				
DDWD 1003	DDWD 1023	DDWD 2033	DDWD 2043	DDWD 2053	
DDWI 1012	DDWI 1062	DDWI 2102	DDWI 2162	DDWI 3232	
	DDWI 1072				
DDWI 1022	DDWI 1082		DDWI 2192	DDWI 3252	
	DDWI 1092	DDWI 2122	DDWI 2202	DDWI 3272	
DDWI 1032		DDWI 2132		DDWI 3242	
DDWI 1042			DDWI 2212	DDWI 3262	
DDWI 1052		DDWI 2112	DDWI 2172	DDWI 3282	
			DDWI 2182		
			DDWI 2222		
		DDWI 2142			
		DDWI 2152		DDWI 3291	DDWI 3308

SYNOPSIS OF CORE COURSES

DIPLOMA IN ISLAMIC STUDIES EDUCATION

DDWI 1012 : Educational Philosophy

This course examines education from different perspectives, in order to make sense of current developments in education globally, regionally, and within the country. The course covers general concepts of education, the various philosophical schools of thought, as well as regional and global agenda affecting education, such as the ASEAN community and the Sustainable Development Goals (SDGs). By exposing students to the various dynamics affecting education, it is hoped that the students would be able to carry out their responsibilities as effective changemakers, both in the education sector as well as any professional field of their interest.

DDWI 1022 : Principles of Islamic Jurisprudence I / *Usul Fiqh I*

This course will introduce students to the early chapters in the debate on Usul Fiqh. It will discuss the introduction to Usul Fiqh: its meaning, emergence, history of compilation; Islamic Law: understanding, division: taklifi and wad'iy, al-Hakim, al-mahkum fih, al-mahkum 'alayhi, al-ahliyah; Islamic evidence: The argument of the Qur'an: Qat'iyah al-thubut al-wurud, dilalah nusus al-Quran, qat'iyah and zanniyah; Hadith: argument, division from the point of view of sanad and wurud, qat'iyah and zanniyah, the function of hadith on the Quran; Ijma ': its meaning and argumentation; Qiyas: his argument; as well as on disagreements.

DDWI 1032 : Arabic Grammar I / *Qawaid Lughah Arabiyyah I*

This course discusses the division of words: ism, fi'l, and harf, division of ism and fi'l: al-Mu'rabah, al-Mabniyyah and al-l'rab's address. Also discussed are Marfu'at al-Asma which includes al-Mubtada', al-Khabar, Ism Kana wa Akhawatuha, Khabar Inna wa Akhawatuha, al-Fail, Na'ib al-Fail and al-Tawabi '. Also discussed are al-Mizan al-Sarfiyy: al-Ism al-Sahih wa Ghayr al-Sahih al-Akhir, al-Nakirah wa al-Ma'rifah, al-Jamid wa al-Mutasarrif, Mufrad, Muthanna, and Jama'.

DDWI 1042 : Jawi and Islamic Calligraphy

This course discusses the history and role of Jawi in Malay civilization. Students are exposed to how to spell and write Jawi correctly, the formation of loan word spelling as well as understanding of the old and new Jawi spelling system so that comparisons and adjustments can be made. The text of the classic Jawi book is used as a reference and exercise. Creativity in writing Jawi is applied according to the method of Nasakh calligraphy which is the main writing of Jawi books. Several calligraphy figures as well as traditional learning methods were introduced. Exposure to the application of calligraphy is given from the theoretical and practical aspects by making references and comparisons on calligraphy found in various media, including in the decoration of famous Islamic buildings.

DDWI 1052 : Al-Quran Memorization / Al-Quran wa Hifzuh

This course is designed to read, memorize and apply the law of tajwid from the following surahs: al-Fatihah, An-Naba', An-Naziat, Abasa, at-Takwir, al-infitar, al-mutaffifin, al-Insyiqaq, al-Buruj, al-Tariq, al-A'la, al-Ghasiah, al-Fajr, al-Balad, al-Syams, al-Layl, al-Duha, al-Insyirah, al-Tin, al-Alaq, al-Qadr, al-Baiyinah, al-Zalalah and al-'Adiyat.

DDWD 1003 : Computer System and Applications

This course will expose students to the knowledge and skills of computer system and applications. Students will be able to handle computer hardware including input, processing, output, storage, understand the importance of the central processing unit (CPU) and cloud computing technology. Students will work together to investigate how devices interact with the operating system and other software. Besides, students learn about the factors affecting the performance of a computer system. Students will also explore different types of software such as computer application (word processing, spreadsheets, and presentations graphics), system and utility.

DDWI 1062 : Educational Psychology

This course introduces students to the importance of educational psychology in providing basis of various concepts relating to learning, cognition, motivation and classroom practice. This course is designed to facilitate students in understanding differences of students especially in terms of their cognitive, emotional and social development at schooling age through active learning activities and discussion. In addition, the course is crafted to assist student in acquiring knowledge and understanding psychological concepts, principles and theories relating to teaching practice and learning strategies. The course involves assessment that would assess students' understanding and ability to apply relevant principles and theories relating to classroom teaching through various types of assessment.

DDWI 1072 : Fundamental Pedagogy

This course aims to equip students with the knowledge and skills of teaching and learning pedagogy. Topics discussed relate to teaching models, approaches, strategies, methods, and techniques, 21st Century Learning concepts (PAK21), assessment, micro-teaching, and classroom management. Class discussions and assignments focus on planning and implementation in the context of PAK21. In addition, the application of knowledge and teaching skills in micro-teaching sessions also helps practice in preparation for real situations. The course also trains students to develop self-confidence, collaboration, critical thinking, and creativity, and to communicate effectively through project-based teaching orientation.

DDWI 1082 : Principles of Islamic Jurisprudence II / Usul Fiqh II

This course is a continuation of Usul Fiqh I (DDWI 1022). It discusses the Maqasid al-Shari'ah, al-Ijtihad, al-Taqlid, al-Talfiq, Ifta' and fiqh ikhtilaf.

DDWI 1092 : Fiqh Ibadah

This course discusses the concepts and laws of the Fiqh Ibadah based on the Shafie school of thought (madhhab) in Islamic law which covers the following topics; Toharah: Impurities and purification, ablution (wudu') and bathing (ghusl); Prayers: prayer obligations, Friday prayer, prayer of a traveller (musafir), and the congregational prayer; Zakat: zakat-obliged property, zakat distribution; Fasting: conditions, rules and role of fasting. Students will be assessed through mid-semester and final examination, blended learning involving e-learning activities and the collaboration project. This course is expected to train students to provide accurate and comprehensive views on the performance of worship. The course is also expected to contribute to a holistic and contemporary understanding of fiqh towards creating a harmonious complementary society.

DDWD 1023 : Information Technologies and Communication Application

This course expose students to computer network devices and technologies as well as data communication and telecommunication. The knowledge will helps students to understand the evolution and application of network technologies in education and as preparation as a ICT literate teacher. Students are also going get to know to applications, ethical and current issues related to the usage of the Internet. At the end of the course, students able to uses various Internet application and technologies for the purpose of teaching and learning.

DDWI 2102 : Educational Measurement and Education

The course discusses the basic principles of measurement, testing and assessment in classroom. The course outlines procedures for designing or selecting, administering and interpreting a variety of assessment measures typically used in classrooms and schools. Topics covered include concepts and types of tests, types of evaluation, principles of test construction, test scores and items analysis, and interpretation and reporting of test information. The course is designed to facilitate students acquiring knowledge and understanding of concepts, principles and techniques of educational measurement and classroom assessment. This course will adapt communication and numerical skills, hence students will be able to deliver ideas in a clear, effective and comprehensible manner and able to define and analyze problems and make well supported solutions.

DDWI 2112 : Islamic Faith

This course discusses the meaning of faith, the concept of Tauhid, the uniqueness of Islamic faith, the concept of prophecy and Sam'iyyat; factors of strengthening and destroying the faith as well as superstitious matters in the creed.

DDWI 2122 : Fiqh Muamalat

This course discusses the concepts and laws of the Fiqh Muamalat based on the Shafie school of thought (madhhab) in Islamic law which covers the following topics; The concepts of property and ownership in the Islamic muamalat system: types of property, and types of ownership; contract theory: contract formation, qualifications, disability matters, and khiyar; major contracts in muamalah: sale, lease, gift, and loan. This course is expected to train students to provide accurate and comprehensive views on the Islamic law of transactions. The course is also expected to contribute to a holistic and contemporary understanding of fiqh towards creating a harmonious complementary society.

DDWI 2132 : Arabic Grammar II / Qawaid Lughah Arabiyyah II

This course will expose students to the relationship between words in phrases, clauses and sentences; Arabic grammar and morphology in theory and practice. Discussions include al-Asma 'war: Khabar Kana wa Akhawatuha, Ism Inna wa Akhawatuha, al-Maf'ul bih, al-Maf'ul al-Mutlaq, al-Maf'ul li Ajlih, al-Maf'ul Fih, al -Maf'ul Ma'ah, al-Hal, and al-Mustathna '. This course also discusses al-Fi'l: al-Sahih wa al-Mu'tall, al-Fi'l al-Lazim wa al-Fi'l al-Muta'addi, al-Ism al-Mujarrad wa al-Mazid , al-Fi'l al-Madi, al-Mudari 'and al-Amr, al-Fi'l al-Mabni li al-Ma'lum wal-Mabni li -Majhul, al-Hamzah; and al-Ilal al-Ibdal.

DDWI 2142 : Arabic Language Teaching Methods

This course discusses various methods of teaching Arabic such as grammar and translation methods, direct method, listening and speaking methods, elective methods. Students will be exposed to factors which influence effective teaching of Arabic using 21st Century Learning Methods, suitable textbooks, use of language labs, and development of language teaching tools, assessment and also Micro Teaching.

DDWI 2152 : Methods of Teaching Islamic Education

This course will expose students to the Introduction to Islamic Education in terms of philosophical foundations, objectives and fields. History of the Development of Islamic Education, the Teaching Approach of Rasulullah and the Companions, the Development of Islamic Education in Malaysia, Islamic Education in the Primary School Standard Curriculum (KSSR) and the Integrated Secondary School Curriculum (KBSM) and the Secondary School Standard Curriculum (KSSM), Introduction to the J-QAF Program, Application of pure values, across the curriculum and join forces. Fardhu Ain Assessment Approach (PAFA), Testing, Measurement and Assessment of Islamic Education.

DDWD 2033 : Teaching and Learning Technology

The course introduces the principles of educational technology in relation to the teaching and learning process. It explores the utilisation and integration of the technology in education with a purpose of improving education. This includes the discussions on the use of the basic concept of communication and instructional design models in designing learning materials so as to improve and meet the specific goals in teaching and learning. As learning materials today have greatly expanded because of the various technological advances, students will take a step back to learn some of the conventional technology such as the blackboard, whiteboard, televisions, VCRs and different types of projectors (overhead, slide and opaque projectors). The students will also be given opportunity to explore the use of newer technology such as the computer, various software applications, LCD projectors, camcorders, digital cameras, scanners, the Internet, satellite, interactive TV, audio & video conferencing and artificial intelligence in designing the most effective learning environment for students. With the knowledge of educational technology, the future educators must be proficient in computer literacy. Thus, at the end of this course students are taught to develop instructional materials for teaching and learning purposes through group work projects as they will become an educator later to address the digital divide in the society.

DDWI 2162 : Sociology of Education

This course is designed to expose students to various concepts related to sociology of education. It discusses education from the perspectives of sociology. Students will also be exposed to the concepts of socialization agents, social stratification, family, school and community as social institutions. This course also discusses topics on social changes and social mobility through education. Students are expected to be able to identify issues on potential service-learning projects.

DDWI 2172 : Introduction to Ulum Quran

This course discusses the meaning of the Qur'an; name, nature of the Qur'an, collection of the Qur'an, revelation, the relationship of the Qur'an with other types of revelation, the difference between the Qur'an and the Hadith Qudsi. Subsequent discussions focused on; 'Ulum al-Quran; definition and scope of debate, compilation, and bookkeeping of 'Ulum al-Quran. Nuzul al-Quran; the stages of the revelation of the Qur'an, the wisdom of the gradual revelation of the Qur'an; The earliest and last verses of the Quran; Asbab al-Nuzul, the importance of understanding Asbab al-Nuzul in rejecting ambiguity in the text of the Qur'an. Tafsir; definition, conditions and manners of Mufasssir, growth and development of tafsir, types of tafsir and misinterpretation of tafsir.

DDWI 2182 : Introduction to Ulum Hadis

This course discusses the introduction of hadith: distribution, collection of hadith, the role of hadith towards al-Quran, position of hadith in Islamic jurisprudence, methods of accepting and delivering hadith, Quranic differences, qudsi and Nabawi, Jarh and ta'dil, history of hadith writing, mawdu' (fabricated) hadith and its innovation, as well as the study of several mawdu' hadith, factors that guarantee the hadith survival, the position of the hadith: sahih, hasan, da'if, official form of hadith, doubt among orientalist around Bukhari and Muslim authentic hadith.

DDWI 2192 : Fiqh Sirah

This course exposes students to the importance and privilege of knowing Sirah Nabawiyah as an element to understand Islam. Students are exposed to knowledge about the Arabian Peninsula background, the events of the birth of the Prophet SAW, his life, the preparation of the apostles, the stage and form of receiving revelation, his da'wah struggle, migration, and war. The discussion also focuses on the aspect of Rasulullah SAW as the best follower in various areas of life as well as teaching and example from every event that occurs.

DDWI 2202 : Fiqh Jinayat

This course discusses the concepts and laws of Fiqh Jinayat based on Shafie schools of thought (madhhab) in Islamic law. The topics discussed are the philosophy of punishment in Islam; the crimes of hudud and its punishments, such as zina, qazaf, sariqah, qat' al-tariq, shirb al-khamr, riddah, and hirabah; the crimes of qisas and diyat and its punishment; and the crime of ta'zir and its punishment. Formative and summative assessments are used to assess students. Methods of blended learning through e-learning activities and collaborative projects are applied in teaching and learning. This course is expected to train students to present their perspectives in addressing current issues in Fiqh Jinayat in accordance with the four madzhabs.

DDWI 2212 : Islamic Morals

This course discusses the concept of akhlak, resources of akhlak, differences among akhlak, moral and ethics, the position and importance of akhlak as well as the characteristics of akhlak al-karimah. The formation of akhlak, and akhlak mahmudah and mazmumah. Lastly, it discusses the role of akhlak and its relationship to the contemporary issues; in politics, economics and social.

DDWI 2222 : Maharat Al-Qur'an

This course discusses the introduction to the basics of tajwid, makhraj and the nature of letters, the law of nun sakinah and tanwin, the law of mim sakinah, the law of mad, waqaf and ibtida 'and Rasm Uthmani. Ilmu Qira'at; introduction to the science of qiraat; Qira'at Sab'ah, manhaj Qira'at Sab'ah, Mabadi " ilm Qira'at, pillars of authentic qira'at, types of qiraat, differences between al-Qurra ', alriwayah, al-Tariq and wajah, the introduction of Imam Nafi 'al-Daniyy and his narrator and his manhaj qira'at, the introduction of Imam Qalun and Imam Warsh and their manhaj qira'at, the introduction of Imam Ibn Kathir al-Makkiyy, his narrator and his manhaj qira'at. Applying the practice of qira'at surah al-Fatihah.

DDWD 2043 : Introduction to Multimedia

This course gives exposure to students about theory and basic concept of digital graphic, animation, audio and video. Students will learn about the main concept for each element and how to use it appropriately in developing multimedia applications and websites. Students will be guided on how to use various techniques to create high quality multimedia elements using current digital graphic, animation, audio and video software. This course also stresses on combination of multimedia elements in creating effective and high-quality teaching materials.

DDWI 3232 : Guidance and Counselling

This course will expose students to the history, background, definition and concept, significance and aims of the guidance and counselling service. Students will be looking at the techniques and approaches in coping with problems at school. Students will also cover the different types of counselling services available and the duties and ethics of a counsellor. Comparisons between several aspects of western and Islamic counselling will also be discussed. At the end of the course,

students will be able to conduct face to face or online counselling session and demonstrate the ability to communicate effectively using appropriate tools and good interventions in guidance and counselling session. Students can show the ability to develop an inquisitive mind about counselling issues and ability to act ethically in making decision and interacting with the community.

DDWI 3242 : Arabic Grammar III / *Qawaid Lughah Arabiyyah III*

This course will expose students to the relationship between words in phrases, clauses, and sentences; Arabic grammar and morphology in theory and practice. The discussion focused on several topics on Mansubat al-Asma ', namely al-Munada and al-Tamyiz (including al-Tawabi' lil Mansubat: al-na'at, al-'atf, al-tawkid, and al-badal). Also discussed are the al-Asma Surahs': al-Majrur bi Harf Jar and al-Majrur bil-Idafah (including al-Tawabi'lil Majrurat). Types of al-Asalib: Uslub al-Shart, Uslub al-Qasam, Uslub al-Madh wa al-Zamm, Uslub al-Ta'ajjub, Uslub al-Ikhtisas, Uslub al-Ighra 'wa al-Tahdir, Uslub al -Istighathah, and Uslub al-Istifham. The discussion in the Sarf (Arabic Morphology) involved topics related to al-Tasghir and al-Nasab.

DDWI 3252 : Introduction to Islamic Da'wah

This course discusses the meaning, concept and history of da'wah. It also describes the importance of da'wah as a discipline of modern knowledge and its pillars, namely Maudhu, Da'i, Mad'u and Manhaj of da'wah. Next, it explains the concept of da'wah to Muslims and non-Muslims which focuses on the analysis of its challenges and approaches.

DDWI 3262 : Verses and Hadith Related to Legislation

This course will expose students to information on selected verses of the Qur'an and the Prophet's hadith in the field of Islamic law such as ibadah (worship), munakahat (marriage), muamalat, jinayat (criminal law), education, family, society, morals and information technology. Students will be able to understand the methodology of ayat wa hadith ahkam, comparison of dalil and arguments in Islamic law construction as well as identify misunderstandings and misapplication of the dalil in electronic and social media.

DDWI 3272 : Fiqh Mirath

This course exposes students to methods of faraid calculation for legal heirs in Islamic inheritance management. The students can also understand Islamic estate planning contracts (Islamic intervivos, will and Matrimonial Property) which must be in line with Shariah and community needs. Through case study, the students will be able to demonstrate the current issues related to Islamic inheritance management and planning such as charged property, conditional inter vivos (umra and ruqba), succession management under Land Act (Group Settlement Areas) 1960, Baitulmal and Adat Perpatih. The students also discuss recent development of Islamic inheritance management and planning industry which is involving various government and private agencies. This course involves problem-based learning, case study and online discussion to enhance student's thinking skills.

DDWI 3282 : Islamic Civilisational Heritage in the Malay World

This course introduces students to the Islamic Malay civilisation, the role of Islamization in radically and holistically transforming the Malays and their worldview. Students are also exposed to the importance of Malay language as a medium of communication and knowledge transfer, the complementary role of the Malay rulers and scholars and the dissemination of Islamic education in the institution of pondok and pesantren. The heritage in the forms of arts, culture, local genius and

Malay Manuscripts depicts the intact worldview grounded on the religion of Islam and the Malay tradition. Finally, students will carry out a project on prominent Malay scholars and their contribution to the Islamic Malay civilisation. Throughout the course, different teaching and learning strategies such as collaborative learning, active learning as well as blended learning are adopted. The course also enable students to develop scholarship skill.

DDWI 3291 : Microteaching

This course is designed to prepare students to undergo practical teaching in schools. It will emphasize mainly in the hands-on experience in which students are required to prepare lesson plan (for theory and practical class) and actively involved in practicing teaching skills. Students are exposed to teaching activities which consist of verbal and non-verbal teaching skills such as class control, questioning, explaining, rewarding, smiling, nodding, gestures, movements, etc. Finally, students will be given the opportunity to practice their skills in microteaching session which include introduction, induction set, development and closing. Group discussion will be conducted in order to rectify and remedy the strength and the weaknesses of the teaching. Student will be guided to make self-reflection and writing reflective practice.

DDWD 2053 : Information Management System in Education

Students acquire the basic knowledge and skills needed to effectively utilize information systems in support of school's organizational strategy. In this course, students will be introduced to the fundamental of information management system and the skills necessary to design and deploy a computer-based application. They will create a database driven user-centric application that designed specifically for managing information related to the field of education.

DDWI 3308 : Teaching Practicum

This practicum requires students to undergo teaching practice in designated secondary schools. For the first week of the practicum, the students are required to familiarize themselves with the school environment (school orientation). In this orientation, they need to produce a portfolio pertaining to the school's administration and teachers' responsibilities. Students are required to engage in a classroom teaching practicum in accordance with their specialized area of teaching. They are expected to apply all the teaching skills that they have learned in the related courses to the classroom context. They will be jointly supervised by faculty lecturers (Guiding Lecturers) and school teachers (Guiding Teachers) with a ratio of marks 70:30.

DEPARTMENT OF

**GEOMATICS
AND BUILT
ENVIRONMENT**

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Land Surveying		
2. Final Award		Diploma in Land Surveying		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Land Surveyors Board Peninsular Malaysia		
6. Code of Programme		DDWL		
7. Language(s) of Instruction		Bahasa Melayu and/or English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full Time and Part Time		
11. Study Duration		Full Time Minimum : 6 semester (3 Years) Maximum : 9 semester (4 ½ Years) Part Time Minimum : 4 semester (4 Years) Maximum : 18 semester (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	15
Short	0	4	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of **THREE (3) credits (GRADE C)** inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects (NOT inclusive of previously listed subjects with credits)

AND

Obtained a pass (GRADE E) in English Language.

OR

Obtained qualification from Polytechnic / Kolej Komuniti / Certificate which, relevant with the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Obtained Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / Certificate which, relevant with Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Passed O-Level with minimum **THREE (3) credits (GRADE C)** inclusive of Mathematics and TWO (2) of other subjects.

	<p>OR</p> <p>Any related qualifications awarded by the Malaysia Higher Education</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> • <i>Candidates for Diploma in Land Surveying programme must not have colour blindness or any disabilities which may hinder practical work.</i>
--	---

13. Programme objectives:

Graduate of Diploma in Land Surveying, will achieve the followings objectives:

- i. Competent, creative, critical and innovative in problem solving related in the field of land surveying.
- ii. Communicate effectively with leadership skill and self-confidence while striving for career development through life-long learning.
- iii. Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
<p>PLO1 Acquire knowledge of science and technology in the field of Land Surveying (KW)</p>	<p>Ability to incorporate knowledge of survey and mapping principles, mathematics, science, humanities, general knowledge and soft skills in the development of an assistant land surveyor or technical assistant.</p>	<p>Active learning, lectures, tutorials, fieldwork, lab work, assignment, Project Based Learning, Multidisciplinary Course, industrial training, individual study, demonstration, project based learning.</p>	<p>Examinations, field and laboratory reports, seminar presentations, assignments, quiz, group project reports.</p>

<p>PLO2 Apply and analyze information using appropriate Land Surveying techniques and tools (AP)</p>	<p>Use techniques, skills and modern land survey tools to solve land surveying related problems creatively.</p>	<p>Active learning, lectures, tutorials, fieldwork, lab work, assignment, Project Based Learning, Multidisciplinary Course, industrial training, individual study, demonstration, project based learning.</p>	<p>Examinations, laboratory reports, presentations, discussions, skills demonstration, problem based exercises, group projects.</p>
<p>PLO3 Execute and manage Land Surveying tasks using available resources (PS)</p>	<p>Ability to plan and conduct survey and mapping works using the most appropriate techniques to solve land surveying and related problems.</p>	<p>Active learning, lectures, tutorials, fieldwork, lab work, assignment, Project Based Learning, Multidisciplinary Course, industrial training, individual study, demonstration, project based learning.</p>	<p>Laboratory reports, presentations, discussions, skills demonstration, problem based exercises, group projects.</p>
<p>(b) Generic Skills</p>			
<p>Programme Learning Outcomes (PLO)</p>	<p>Intended Learning Outcomes</p>	<p>Teaching and Learning Methods</p>	<p>Assessment</p>
<p>PLO4 Interpersonal Skills (IPS)</p>	<p>Interact effectively and collaboratively in managing relationships in teams and within the organisations.</p>	<p>Fieldwork, Assignment, Industrial Training</p>	<p>Project, Peer Assessment, Logbook, Practical Evaluation Form.</p>
<p>PLO5 Communication Skills (CS)</p>	<p>Effectively and convincingly communicate with rationales ideas, and propositions through written, visual and oral presentations to different audiences</p>	<p>Active learning, Lab, Project Based Learning, Multidisciplinary Course, Industrial Training, Multidisciplinary Course.</p>	<p>Project, written assignments, field and laboratory reports, oral presentations and Internal Panel, External Panel.</p>
<p>PLO6 Digital Skills (DS)</p>	<p>Apply a range of digital applications as well as to seek and process data related to work and studies in the field of land surveying.</p>	<p>Active learning, Lab</p>	<p>Project, written assignments, presentations, laboratory reports.</p>

PLO7 Numeracy Skills (NS)	Demonstrate the ability to use and interpret routine and complex numerical and graphical / visual data in the field of land surveying.	Active learning, lecture, fieldwork, lab	Project, written assignments, homework.
PLO8 Leadership, Autonomy and Responsibility (LAR)	Demonstrate leadership qualities and be able to act as a responsible member of the group towards achieving common goal.	Fieldwork, lab, project, Project Based Learning, Multidisciplinary Course, Industrial Training.	Project, Peer Assessment, report, assignments, logbook, Internal Panel, External Panel.
PLO9 Personal Skills (PRS)	Identify self-improvement initiatives and possibilities for career development or further education.	Multidisciplinary Course, Industrial Training, Project Based Learning, lab	Peer Assessment, report, logbook, Internal Panel, External Panel, lab work, presentations
PLO10 Entrepreneurial Skills (ENT)	Demonstrate the ability to identify new opportunities in dealing with issues related to land surveying with entrepreneurial mindset.	Project Based Learning, Multidisciplinary Course, discussions.	Written assignments.
PLO11 Ethics and Professionalism Skills (ETS)	Demonstrate the ability to perform tasks and make decisions in the field of land surveying ethically, professionally and with integrity.	Project, fieldwork, Multidisciplinary Course, Industrial Training.	Project, presentations, assignments, logbook, Internal Panel, External Panel.
15. Total credit hours to graduate		90 credit hours	
16. Programme Structures and features, curriculum and award requirement			
<p>The programme is offered in full time mode and based on a 2 Semester Academic Session with several subjects being delivered and assessed in each Semester.</p> <p>Assessment (Refer to academic regulation):</p> <p>a) Final examination not more than 50 % and course work not more than 60%</p> <p>b) Skill acquisition: 100% Industrial Training including industrial report and course work.</p>			

Award requirements:

- Achieve a total of **90** credit hours with minimum Cumulative Point Average (CPA) of 2.00
- Pass industrial training.

17. Our Uniqueness

- This program is designed to equip students with engineering skills through hands-on laboratory and field works.
- Practical training for one week known as Survey Camp programme (DDWL 3511).
- Accreditation by the Board of Land Surveyors Peninsular Malaysia.

18. Career Prospects and Career Paths

Graduates of the program can work as:

- a) Technical assistant for both government sector and private sector.
- b) Continue for degree and professional courses to qualify as a Licensed Land Surveyor.

19. UTM Diploma ++ Programme

Students are given an opportunity to enroll in a non-credited short courses offered by university during semester break.

20. Facilities available

List of laboratories:

- Plan Drawing Studio.
- Data Processing Laboratory
- Photogrammetry and Cartography Laboratory.
- Surveying Laboratory.

List of other special facilities/equipments:

- Total Station
- Optical Theodolite
- Automatic Level
- Digital Level
- GNSS or Global Positioning System (GPS)
- Ground Penetrating Radar (GPR)
- Electromagnetic Locator (EML/PCL)
- Telescope
- QGIS
- Arc GIS
- SDRMAP
- CDS
- ERDAS
- AutoCAD

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS 1012	Value and Identity	2
UHLB 1032	Introductory Academic English	2
DDWS 1132	Mathematic for Surveyor 1	2
DDWS 1733	Physics For Surveyors	3
DDWL 1103	Basic Surveying	3
DDWL 1102	Introduction to Geomatics	2
DDWL 1612	Computer Aided Design for Surveyors	2
Total		16

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS 1182* / UHLM 1122*	Appreciation for Ethics and Civilisation / Malay Language for Communication 1	2
UHLB 1042	Intermediate Academic English	2
DDWS 1142	Mathematic for Surveyor 2	2
DDWL 1423	Geodesy	3
DDWL 1133	Engineering Survey	3
DDWL 1413	Field Astronomy	3
Total		15

Note:*Local students register for UHMS while International students register for UHLM.

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULRF 2**2	Service Learning & Community Engagement Courses	2
DDWS 2043	Mathematic for Surveyor 3	3
DDWL 2153	Engineering Survey Technology	3
DDWL 2214	Cadastral Survey	4
DDWL 2623	Computer Programming	3
Total		15

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWR 3652	Design Portfolio	2
DDWL 2323	Geographical Information System	3
DDWL 2633	Survey Adjustment	3
DDWL 2453	Satellite Positioning	3
DDWL 2232	Land Administration	2
DDWL 2333	Photogrammetry	3
Total		16

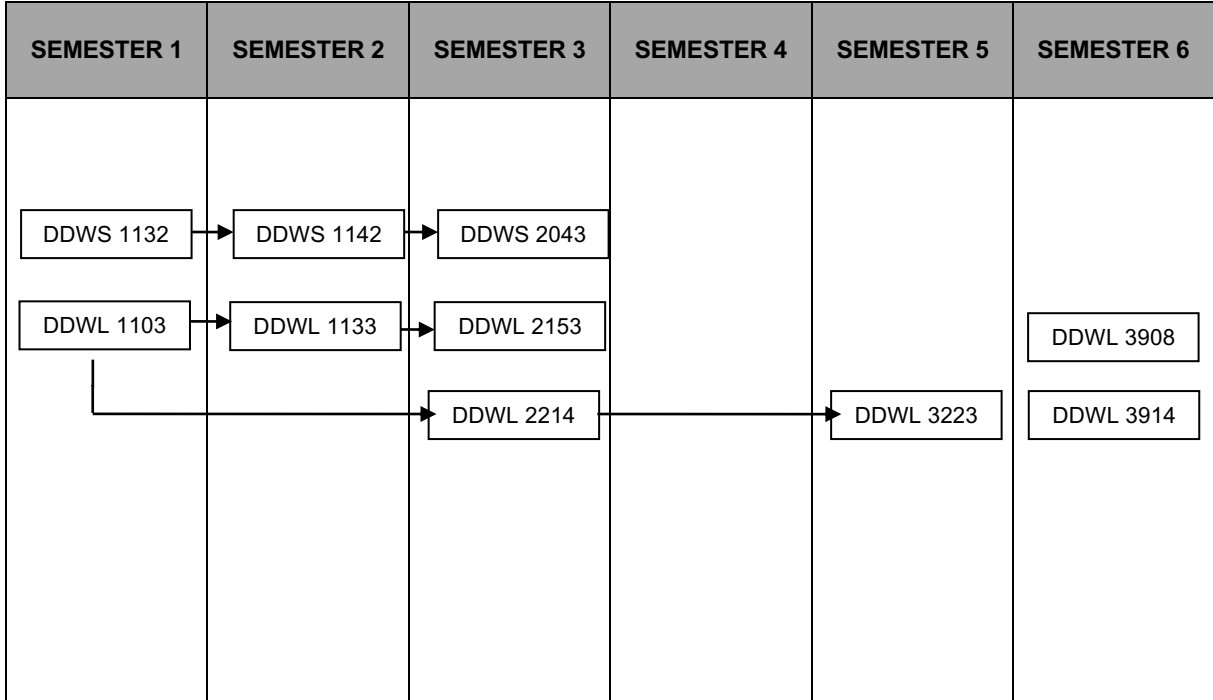
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWL 3223	Cadastral Practice	3
DDWL 3143	Hydrographic Surveying	3
DDWL 3313	Cartography	3
DDWL 3363	Underground Utility Surveying	3
DDWL 3343	Remote Sensing	3
DDWL 3511	Survey Camp	1
Total		16

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWL 3908	Industrial Training	8
DDWL 3914	Industrial Training Report	4
Total		12
Total Credits		90

**PRE-REQUISITE
DIPLOMA IN LAND SURVEYING**



Student must pass all courses for Semester 1,2,3,4 & 5 before proceed to Semester 6.

SYNOPSIS OF CORE COURSES

DIPLOMA IN LAND SURVEYING

DDWL 1103: Basic Surveying

This course presents the principles of surveying and mapping. In particular, it emphasizes on fundamental aspects which include surveying and mapping techniques, basic instruments, procedures, reference system and mapping, measurements of distance, bearing and angle and calculations of area and volume. The course features extensive use of process simulation tools through group as well as individual project works. At the end of this course students should execute traverse and levelling survey as well as the computation.

DDWL 1102: Introduction to Geomatics

This course covers the fundamental knowledge of land surveying and equips students with both theoretical for wider exposure and better understanding of the subject matters. Basic introduction include traditional to digital disciplines of photogrammetry and remote sensing, land and engineering surveying, geographic information systems, cartography, geodesy, hydrography, cadastral surveying, land information management and satellite surveying are delivered in this course. At the end of this course, students can get a wider imagination and view of the activities in land surveying fields that include integrating the acquisition, processing, analysis, display and management of spatial information.

DDWL 1133: Engineering Surveying

(Pre-requisite DDWL 1103)

This course presents the principles of engineering surveys. In particular, it emphasizes on fundamental aspects which include theodolite traversing, levelling, detail surveys, horizontal curve, transition curve, vertical curve, mass-haul diagram and setting-out. With this, student should describe all these principles of engineering surveying at the end of this semester. The course features extensive use of process simulation tools through group as well as individual project works.

DDWL 1413: Field Astronomy

This course introduces students to the basic concept of the astronomy and its application in surveying. It will expose to the concept of universe such as galaxy and solar system. The course will also emphasize the concept of the celestial sphere, its geometry, astronomical triangle and basic equations of the sphere triangle. The student also will expose to the types of instrument and the coordinates system, time: solar and sidereal day, mean solar time, apparent solar time, solar and star observation: azimuth, latitude, longitude of control stations used in cadastral surveying, geodesy and Falak Syarie (Islamic astronomy).

DDWL 1423: Geodesy

This course deals with basic concept and knowledge of geodesy. This will include history on determination of size and shape of the earth, fundamental principle of the geoid, sphere, ellipsoidal geometry, curves of the ellipsoid's surface, computation of geodetic coordinates, direct and inverse geodetic problems, geodetic datum (local and global datum), deflections of vertical. The coordinate systems and datum transformation. Coordinate systems used in Malaysia. Geodetic practice in Malaysia to improve student knowledge and skills on geodesy for positioning, mapping and other geomatics related applications. At the end of this course, students will be able to identify the surveying parameters (position, distance and angle) in a problem and be able to create the relationships between these parameters while correctly referencing it to the appropriate model of the shape of the earth. The student will gain an appreciation of the central role played geodesy in determination of the shape of the earth and mapping purposes.

DDWL 1612: Computer Aided Design for Surveyors

This course presents the principles of constructing surveying plan by using computer as an aided tool. In particular, it emphasises on developing drawing skills through exposure of computer aided drafting, 2D CAD, constructing survey plan, data merging, establishing working parameters, file management, data input and data presentation. The course features extensive use of process simulation tools through individual project works. At the end of this course, student should display basic drafting skill to produce land survey plan.

**DDWL 2153: Engineering Surveying Technology
(Pre-requisite DDWL 1133)**

This course presents the surveying technology instruments which include precise levels, high- precision theodolites, and electronic distance and angle measurement instruments. It emphasis on EDM principles, basic features of instruments, testing, adjustment and calibration, procedures and accuracies, Field to Finish, Digital Terrain Model and computer assisted on road design and earthworks. At the end of this course, student should be able to understand the EDM working principle and demonstrate proficiency in procedures of creating and processing data.

**DDWL 2214: Cadastral Survey
(Pre-requisite DDWL 1103)**

Introduction to the course of cadastral survey. The explanation on the cadastral survey and the importance of the survey to outside world. Cadastral survey includes the initial processes such as computing baseline, doing refixation, types of "batu ukur", demarcation, CRM system as well as the F2F process. The overall courses were based on the Buku Pekeliling that were distributed by JUPEM. At the end of this course, student will be able to apply cadastral surveying procedure by following the KPUP circulars.

DDWL 2232: Land Administration

Introduction to Land Administration in Malaysia, Land Resources Concept, State and Federal Land Management, Land Registration and Title, National Land Code, Cadastral Concept and Torrens System. In addition, students also will introduce to Cadastre System History, Land Administration Related Institutions and Agencies, Land Administration in Peninsular Malaysia, Sabah and Sarawak, computerised Land Registration System, Land Administration issues and Future Trends. At the end of this course student should understand various of laws related to land administration in Malaysia.

DDWL 2323: Geographical Information System

The course is designed to give the student a basic understanding of Geographic Information System or Land Information System. All related philosophies, theories and methodologies of GIS/LIS will be explained. Terminology, history of GIS/LIS, basic concepts, components of GIS/LIS, database, application and recent issues will be covered. At the end of this course students should be able to select and analyse contents of geographical data.

DDWL 2333: Photogrammetry

This course introduces students to the basic principles and elements of photogrammetry. Topics covered are: Aerial cameras and aerial photographs, Control points for photogrammetric mapping, flight planning. Stereoscopic view and stereo plotter. Orientation. Rectification. Orthophotographs. Introduction to digital photogrammetry. At the end of this course, students will be able to explain the basic principles of photogrammetry and relate the photogrammetry project.

DDWL 2453: Satellite Positioning

This course is designed to provide an understanding of theory and principles of Global Navigation Satellite System (GNSS), Global positioning system (GPS) together with their operation, application and differential GPS technology. The topics covered include: Overview on GNSS; GPS Application, Mission and Planning; GPS Post- Processing (Static and Fast Static) and Differential Mode; Real time Kinematic (RTK) and Virtual Reference Station; GPS Data Capture and Collection; Field and Office Procedures; Field Practice using Static, RTK and Differential Techniques. This course also covers the design and planning of static network and preparing for a GPS Field Survey. At the end of this course, students should be able know to operate the GPS equipment and apply the principles of GNSS.

DDWL 2623: Computer Programming

This course introduces the students to some basic theories and method of computer programming. It will emphasize on the general concepts and basic programming, data entry, data processing, data printing, subprogram such as keyboard, the use of loop, and print on the screen of file shape. The course will also provided problem solving exercises such as problem identification, designing of solution, translate the solution to programming language. At the end of this course, student should be able to use knowledge of computer programming to solve the land survey problems.

DDWL 2633: Survey Adjustment

This course introduces students to the principles, methodology and implementation of least square estimation (LSE) in land surveying. It will emphasize on the general concepts of LSE such as non-linear LSE, statistical analysis that include min, median, mode, residual, expectation, variance, covariance, coloration, quality of LSE, LSE and adjustment software, traverse adjustment, combined model, pre-analysis, solution of normal equation and sequential LSE. The course features extensive use of programming software as computational tool through group as well as individual project works. At the end of this course, student should be able to apply basic LSE methods in related land survey field.

**DDWL 3223: Cadastral Practice
(Pre-requisite DDWL 2214)**

Land Survey according to National land Code, title ownership, survey for reservation, party wall survey, subdivision, partition and amalgamation. In addition, students also will introduce to Surrender and realienation, Land acquisition. Strata survey, Stratum survey, coordinated cadastral system, Marine cadastre, Field to finish, Digital cadastral database, Cadastral data management system, multipurpose cadastral, issues and future trend in cadastral survey.

DDWL 3143: Hydrographic Surveying

This course presents the principles of hydrographic surveying. In particular, it emphasises on fundamental aspects which includes new technologies, measurements, preparation, system configuration, specification, procedures, data acquisition, data processing and data presentation. The course features extensive use of process simulation tools through group as well as individual project works. At the end of this course, students should be able to explain the knowledge of hydrographic survey and working process.

DDWL 3313: Cartography

This course will elaborate on the concept of map digitizing, what is the cartography all about. The importance of maps to people. The data and information uses to create and digitize the maps. There is generalisation, the principle, procedures, and data transformation. In this subject, they will also explain the types of map, map element, topographical and thematic maps, charts, plans, large and small scale maps. At the end of this course, student should be able to explain and apply some basic cartography theory to produce a map.

DDWL 3343: Remote Sensing

This course presents the principles of remote sensing emphasizing physical principles of the visible, infrared and microwave section of the electromagnetic spectrum, remote sensing platforms and sensors, data acquisition, storage and processing, image processing, image analysis, and remote sensing applications. The course features extensive use of process simulation tools through group as well as individual project works.

DDWL 3363: Underground Utility Surveying

This course introduces the utility mapping activities which includes the definition of utility mapping, geomatic roles in utility mapping, instruments, electrical and magnetic properties, antennas, signal measurement, survey methodology, modelling, data analysis and interpretation and database management. At the end of this course, students should be able to do a underground utility detection and analyze the radar image.

DDWL 3511: Survey Camp

The objective of this survey camp is to train student in the main aspect of land survey profession. This includes Engineering Surveying, Cadastral Surveying and Hydrographic Surveying. Engineering survey covers EDM traversing, ordinary levelling, precise levelling and detail surveys. Students are required to fulfil the standard procedures and regulations as applied by the private survey firms. Cadastral surveys involves close traverse, Survey datum. Measurement and booking for bearing and distance. Traverse survey and techniques to extend the line. Short lines measurement. Border demarcation. Hydrographic survey activities involve the establishment of sounding datum (LSD/CHART Datum), establishment of horizontal control point for DGPS positioning and bathymetric surveys. Total Station and DGPS positioning system are used for positioning and water depth is measured using single beam echo sounder. At the end of this course, student should be able to explain and organize survey and mapping work project.

DDWL 3908: Industrial Training

The student will undergo an industrial training for duration of 5 months. During that time the students will be attached to the government or private firm that are related to geomatic jobs and works.

DDWL 3914: Industrial Training Report

After 16 weeks of industrial training, the students need to submit the report and to present what they have acquired and learned during the attachment. The students also can shared experienced to the others.

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Urban and Regional Planning		
2. Final Award		Diploma in Urban and Regional Planning		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Malaysian Qualifications Agency (MQA)		
6. Code of Programme		DDWN		
7. Language(s) of Instruction		Bahasa Melayu and English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full Time and Part Time		
11. Study Duration		Full time: Minimum : 6 semester (3 Years) Maximum : 9 semester (4½ Years) Part time: Minimum : 8 semester (4 years) Maximum : 18 semester (9 years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	15
Short	0	3	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of **THREE (3)** credits (**GRADE C**) inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects (NOT inclusive of previously listed subjects with credits)

AND

Obtained a pass (GRADE E) in English Language.

OR

Obtained qualification from Polytechnic / Kolej Komuniti / Certificate which, relevant with the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Obtained Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / Certificate which, relevant with Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

	<p><u>OR</u> Passed O-Level with minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of other subjects.</p> <p><u>OR</u> Any related qualifications awarded by the Malaysia Higher Education</p>
--	---

13. Programme Educational objectives:

A graduate of this programme should be able to:

- Competent creative and innovative in solving problems in urban and regional planning area field.
- Communicate effectively with leadership skills and self-confidence while striving for career advancement through life-long learning.
- Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities.

14. Programme Learning Outcomes

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge (KW)	Articulate and discuss theories, concepts and principles in urban and regional planning	Lectures, active and cooperative, learning, project based learning, fieldwork, mini project, critique session, presentation, kahoot, studio projects, directed reading, project and problem based learning and industrial training	Tests, quizzes, examinations, individual and group assignments, presentations, individual and group studio projects, seminar paper and industrial training report

<p align="center">PLO2 Cognitive Skills (CG)</p>	<p>Apply knowledge and skills appropriately in addressing urban and regional planning issues in diverse contexts</p>	<p>Lectures, studio projects, critique sessions, mini project, fieldwork, problem based learning and industrial training, active learning, presentation, precedents study,</p>	<p>Tests, quizzes, examinations, individual and group assignments, presentations, individual and group studio projects and industrial training report</p>
<p align="center">PLO3 Practical Skills (PS)</p>	<p>Deftly conduct field works, analyses and evaluate issues in urban and regional planning using appropriate techniques, tools and technologies in sync with current institutional and professional practices</p>	<p>Lectures, active learning, and cooperative learning, studio projects, critique sessions, fieldwork, project and problem based learning presentation, mini project, industrial training</p>	<p>Tests, quizzes, examinations, individual and group assignments, presentations, individual and group studio projects and industrial training report</p>
<p>(b) UTM Graduate Attributes</p>			
<p align="center">Programme Learning Outcomes (PLO)</p>	<p align="center">Intended Learning Outcomes</p>	<p align="center">Teaching and Learning Methods</p>	<p align="center">Assessment</p>
<p align="center">PLO4 Interpersonal Skills (IPS)</p>	<p>Interact effectively and collaboratively in managing relationships in teams and within the organizations</p>	<p>Individual and group studio projects and assignments, project and problem based learning, fieldwork, mini scale research, active learning industrial training</p>	<p>Industrial training report, studio projects, assignments, presentations and seminar paper</p>

<p align="center">PLO5 Communication Skills (CS)</p>	<p align="center">Demonstrate the ability to communicate effectively and confidently through written, visual and oral presentations to different audiences</p>	<p>Project based learning, active and cooperative learning, problem based learning, fieldwork, presentation, critique sessions and studio projects</p>	<p align="center">Studio project verbal presentations, individual and group studio projects, individual and group assignments</p>
<p align="center">PLO6 Digital Skills (DS)</p>	<p align="center">Apply a range of digital applications as well as to seek and process data related to work and studies</p>	<p>Studio projects, project and problem based learning directed reading, cooperative learning, fieldwork, assignments and discussions</p>	<p align="center">Assignments and studio projects</p>
<p align="center">PLO7 Numeracy Skills (NS)</p>	<p align="center">Use and interpret routine and complex numerical and graphical / visual data in urban and regional planning</p>	<p>Lectures, active learning and mini project</p>	<p align="center">Group studio projects and group assignments</p>
<p align="center">PLO8 Leadership, Autonomy & Responsibility (LAR)</p>	<p align="center">Demonstrate leadership qualities and be able to act as a responsible member of the group towards achieving common goal</p>	<p>Studio projects, assignments, projects, critique sessions, project based learning, fieldwork directed reading, mini project, and industrial training</p>	<p align="center">Studio projects, industrial training report, seminar paper, learning log/diaries and group and individual assignments</p>
<p align="center">PLO9 Personal Skills (PRS)</p>	<p align="center">Identify self-improvement initiatives and possibilities for career development or further education</p>	<p>Studio projects and assignments, fieldwork, active and cooperative learning, mini project, presentation, precedents study, project based learning, directed reading</p>	<p align="center">Group studio projects and group assignments</p>

<p align="center">PLO10 Entrepreneurial Skills (ENT)</p>	<p>Demonstrate the ability to identify new opportunities in dealing with issues related to urban and regional planning field with entrepreneurial mindset</p>	<p>Lecture, Studio projects, assignments, active and cooperative learning, fieldwork, directed reading, lectures,</p>	<p>Projects and assignments</p>
<p align="center">PLO11 Ethics and Professionalism Skills (ETS)</p>	<p>Demonstrate the ability to perform tasks and make decisions ethically, professionally with integrity</p>	<p>Studio projects, assignments, fieldwork, directed reading, lectures, active and cooperative learning, project based learning, mini scale research, group discussion, directed reading</p>	<p>Projects and assignments</p>
<p>15. Total credit hours to graduate</p>		<p align="center">91 credit hours</p>	
<p>16. Programme structures and features, curriculum and award requirements</p>			
<p>This programme is offered on full-time mode and is based on a 2 Semester Academic Session with several courses being delivered and assessed in each semester. Assessment is based on coursework, project and final examination</p> <p>Assessment: (Refer to UTM Academic Regulations).</p> <ul style="list-style-type: none"> a. Lecture based courses: Final Examination (not less than 40%) and course work not more than 60%) b. Skill-based courses: 100% course work c. Studio Courses: 100% projects As a pre-requisite to the next level of studio courses, students should obtain minimum grade of D+ in studio courses. d. Passing marks for all courses is 40% <p>Award requirements: Students should achieve a total of 91 credit hours with minimum CPA of 2.00</p>			
<p>17. Our Uniqueness</p>			
<p>Student will go through 4 months of Industrial Training with established town planning firms around Malaysia in order to expose them with the real working experience as an Assistant Town Planner.</p>			

18. Career Prospects and Career Paths

Graduates of the program can work as an Assistant Town Planner in government and private sector and in any related jobs in the urban and regional planning industry. The graduates may also further their studies for a Bachelor of Urban and Regional Planning or in the related field at local or foreign universities

19. UTM Diploma++ Programme

Students are given an opportunity to enrol in short courses offered by the university during semester break e.g oral communication, third language-Japanese, Mandarin and Arabic; professional talk, career and guidance talks.

20. Facilities Available

List of laboratories:

- a. Computer Laboratory (Ms Excel, Access, AutoCAD, SPSS, Adobe Illustrator)
- b. Language Laboratory
- c. Studios

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS 1182* / UHLM 1122*	Appreciation for Ethnic and Civilisation / Malay Language for Communication	2
UHLB 1032	Introductory Academic English	2
DDWN 1013	Introduction to Planning	3
DDWN 1023	Site Planning	3
DDWN 1035	Studio 1: Basic Planning Design	5
Total		15

Note:*Local students register for ULRS while International students register for UHLM.

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS 1012	Value and Identity	2
UHLB 1042	Intermediate Academic English	2
DDWN 1213	Planning and Environment	3
DDWN 1223	Planning Survey Techniques	3
DDWN 1233	Information and Communications Technology In Planning	3
DDWN 1055	Studio 2: Layout 1 (Housing)	5
Total		18

YEAR 2 (SEMESTER 3)

Code	Course	Credit
UKQF 2XX2	Co-Curriculum Service Learning	2
DDWN 2203	Land Use Planning	3
DDWN 2223	Community Planning and Housing	3
DDWN 2253	Urban Design	3
DDWN 2055	Studio 3: Layout 2 (Town Centre)	5
Total		16

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWR 3652	Design Portfolio	2
DDWN 2263	Urban Engineering	3
DDWN 2273	Rural Planning and Development	3
DDWN 2283	Geo Information in Planning	3
DDWN 2075	Studio 4: Layout 3 (Mixed-Development and Development Proposal Report)	5
Total		16

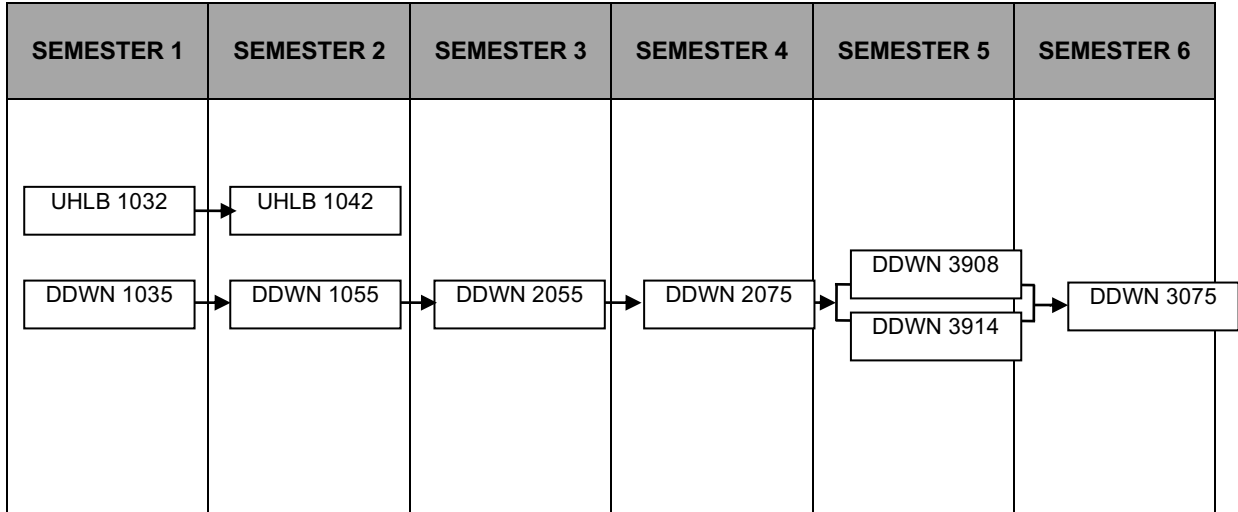
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWN3908	Industrial Training	8
DDWN3914	Industrial Training Report and Seminar	4
Total		12

YEAR 3 (SEMESTER 6)

Code	Course	Credit	
DDWN 3173	Urban Economics	3	
DDWN 3193	Planning Law and Practice	3	
DDWN 3203	Traffic Engineering	3	
DDWN 3075	Studio 5: Urban Area Improvement Study	5	
		Total	14
		Total Credits	91

**PRE-REQUISITE
DIPLOMA IN URBAN AND REGIONAL PLANNING**



Notes: * *Students must pass all studio courses in Semester 5 before proceed to Semester 6.*

SYNOPSIS OF CORE COURSE

DIPLOMA IN URBAN AND REGIONAL PLANNING

DDWN 1013 : Introduction to Planning

This course provides students with a basic understanding about urban planning, with a focus on the definition of urban planning and the ability to practice good ethical values. Students are exposed to urban civilization from the beginning of the valley civilization to the era of Industrial Revolution. Planning theories and approaches are discussed by means of specific examples. History of the formation of the planning discipline is also discussed in this course. At the end of this course, students will be able to explain the evolution of town planning philosophy, approaches and rationale from the past to the present times.

DDWN 1023 : Site Planning

Site planning is an art in managing the physical environment which includes the expertise from other professions such as architect, engineer, urban planner and landscape architect. This course provides student with the knowledge of site planning theories with focus on sustainable development as a main holistic vision. In order to achieve sustainable development through physical form, students will learn on site planning process, site inventory, data collection methods, site analysis, SWOT analysis, sieve mapping technique, development suitability, development concept, concept plan making process, formulate ideas and design principles into spatial, detail design process and technical requirement. At the end of this course, students should be able to explain the fundamental of site planning and demonstrate planning techniques in site analysis exercise (slope analysis and suitability analysis) and apply what was learned in this course into the studio work.

DDWN 1035 : Studio 1 - Basic Planning Design

This course focuses on the basic design and also various communication techniques such as visual, verbal and effective report writing. Students will be introducing graphic communications namely freehand sketching, colouring technique, composition technique, axonometric and perspective drawing and the draughtsmanship skills. Environmental awareness will be exposed to sharpen the student sensitivity towards the environment and to nurture the ability to recognize place uniqueness and environmental issue or problem. The result will be in freehand sketching, mind map and report. Students will be exposed to various types of plans in urban and regional planning and technique in data presentation in a plan such as preparation of base map, drawing convention for the purpose of calculating and preparing slope analysis plan, preparation of site cross section and also to trace and colour the land use map. On top of that, students are introduced to the planning concept and technique in concept illustration in the form of bubble diagrams and concept plan. At the end of this course student will be able to understand the basic planning design and understand the development proposal process.

DDWN 1213 : Planning and Environment

This subject is designed to provide the understanding of concepts and mechanisms underlying environmental planning. It focuses on the understanding of the functions of ecosystems, the impacts of land development activities on such ecosystems and how appropriate environmental planning and management tools can be used to mitigate the impacts. The student will also be exposed to the importance of environmental impact in development plan at all level apart from the understanding on how global community react to environmental issues. At the end of this course student will be more sensitive in tackling the environmental issues before dealing with any development plan or planning permission application.

DDWN 1223 : Planning Survey Technique

In this course, students will be learning on various types of planning survey techniques namely land use survey, building survey, housing survey, commercial survey, industrial survey, household survey and other surveys related to urban and regional planning. Students will be exposed on how to conduct a survey using appropriate planning survey forms and perform the real survey at site. At the end of the survey, students will be able to explain the meaning of every findings they get from the planning survey they have conducted and relate it to urban and regional planning. At the end of this course, students will be able to explain different types of planning surveys in urban and regional planning and able to conduct various types of planning surveys by using appropriate planning survey forms.

DDWN 1233 : Information and Communication Technology In Planning

This course is designed to familiarize students with all aspects of the basic version of AutoCAD, Sketch up and Adobe Photoshop, with an emphasis on graphic applications to be used in urban and regional planning area. Through this course, students will be able to create and present layout and compelling 2D and 3D models, and be competent in both software. Basic introduction to Adobe Photoshop also will be introduced to the students in order to help them using the medium to produce a master plan and good graphic presentation. By the end of this course, students will able to operate the software proficiently to produce a clear and well drawing, 2D and 3D modelling and apply it in urban and regional planning exercises and projects.

**DDWN 1055 : Studio 2 - Layout 1 (Housing)
(Pre-requisite DDWN 1035)**

Students will be learning the basic principles of site planning, basic skills in designing a residential/housing layout, how to use the planning standards in designing a residential/housing layout and to do master plan using appropriate software such as AutoCAD or Sketchup. At the end of the semester, each student will acquire knowledge and skills on how to produce a good residential/housing layout plan and how to make a good verbal and non-verbal presentation.

DDWN 2203 : Land Use Planning

This course will discuss on land use planning and development. This course is designed to provide students with a better understanding on the differences of various types of land use, the dynamics of land uses and its inter-linkages, land use planning theories and concepts, principles and processes, and land use control mechanisms. At the end of this course, students will be able to explain the planning principles of various types of land uses, land use control mechanisms related to it and the current and future land use planning concept in the world in relation to climate change effect reduction and disaster risk reduction.

DDWN 2223 : Community Planning and Housing

This course will discuss on community planning and housing. This course is designed to provide students with a better understanding on the community planning theories, principles, methods, community engagement initiatives, sustainable community planning, characteristics of housing, home ownership, housing need, supply and demand, housing finance and sustainable housing. At the end of this course, students will be able to explain the dynamic of community planning and housing in relation to individual and community well being.

DDWN 2253 : Urban Design

The course offers students with a basic understanding of concepts, elements, principles, techniques, and approaches of urban design. The course also includes a field trip as an approach for enabling students to further understand the aspects of urban design. Exercises on acquiring suitability and designing urban areas are also provided.

**DDWN 2055 : Studio 3 - Layout 2 (Town Centre)
(Pre-requisite DDWN 1055)**

This course grants students with understanding and skills in planning and designing the layout of town centres with a focus on urban design. Students are initially exposed to aspects of spatial organization, architectural aspects, infrastructure, utilities, and amenities of areas to be designated, with the intention that the layout design will take into consideration the forms and functions of the buildings and also infrastructural and utilities requirements. Students will require the necessary skills to conduct townscape appraisal to enable students to assess the character of an area to identify the elements that influence the identity of an urban area. SWOT method will also be introduced to facilitate analysis. Students will be exposed to the methods of preparation of urban design masterplan for a town centre. The project is group and individual based. At the end of the semester, each student will acquire the knowledge and skills to produce a good town centre layout plan.

DDWN 2263 : Urban Engineering

This course introduces students to the basic planning of infrastructures and utilities namely highway and road, drainage system, water supply system, sewerage system, electrical supply, system, natural gas system, solid waste management system, ICT and telecommunication system. Students also will be introduced to the green and smart infrastructures and utilities practices in the world. Students will be exposed with the knowledges and technical terms used by the town planners and engineers in urban engineering. At the end of this course, students will be able to apply knowledges they get from this course to help them produce good layout plans.

DDWN 2273 : Rural Planning and Development

This course introduces the students with the conceptual basis of rural planning and development. The overview of rural planning and development in Malaysia and issues in rural area namely rural poverty and rural-urban migration will be exposed to the student. The concepts, theory and development practice of rural settlement centres in Malaysia particularly the characteristics of traditional villages, new village (Chinese), FELDA and FELCRA will be emphasized. At the end of this course student will acquire knowledge and see the difference on rural planning and development in developing countries and developed country.

DDWN 2283 : Geo Information in Planning

The course offered the students with exposure to the fundamental concepts of spatial location that is tied with information as a tool in order to handle geographically-referenced data in urban and regional planning process. Through this course, students will learn, do research or acquire several techniques and approaches in Geographic Information System (GIS) for collecting, storing, retrieving, transforming and displaying spatial data from the current situations in urban and regional planning context for a particular set of purposes. Students will be involved in the basic GIS data development, using a hands-on approach by learning of Map Info software. By the end of the course, students will possess the basic GIS skills required by industry and able to operate the software proficiently to produce variety of plan.

**DDWN 2075 : Studio 4 - Layout 3 (Mixed-Development and Development Proposal Report)
(Pre-requisite DDWN 2055)**

The course exposes students to the preparation of a development proposal report (DPR) and layout plan as technical requirement in planning permission. The course content comprises of data gathering, literature review, field survey, site analysis and preparation of concept plan with the consideration of development control elements such as zoning, use class order, plot ratio, density and other basic planning principles. It is also designed to develop the students' skills and creativity in layout design preparation by referring to the related and existing planning guidelines and standards in order to achieve an ideal and sustainable layout design. By the end of this course, students should be able to produce a standard layout plan and write a comprehensive development proposal report (DPR) according to the submission requirement.

DDWN 3908 : Industrial Training
(Pre-requisite DDWN 2075)

This course exposes the students to urban and regional planning practice and procedures. The objective is to strengthen the understanding of the theoretical principles, technical and design skills through practical experience. Students will be attached to urban planning firms or government departments for a period of 16 weeks. They should be able to function effectively in a team, seek information and acquire contemporary knowledge, present information and express ideas clearly, effectively and confidently. Students also have to explain in details their daily task in the log book. The log book will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or departments. Student performance will be assessed by agency supervisor and a visiting supervisor. At the end of industrial training, students should be able to demonstrate the application of techniques, skills and tools in urban and regional planning practices professionally and ethically.

DDWN 3914 : Industrial Training Report and Seminar
(Pre-requisite DDWN 2075)

This course requires the students to prepare an industrial training report and seminar paperwork regarding to urban and regional planning practice during their industrial training for a period of twenty (20) weeks. They should be able to seek information, acquire contemporary knowledge, present information and express ideas clearly and effectively in writing industrial training report and seminar paperwork. The industrial training report will cover the profile and range of services of the agency and summarize tasks undertaken and experiences gained by the students during their period of training at the respective firms or departments. Students are also required to prepare seminar paperwork on planning permission and one stop centre. After completing the report, the students should be able to present information and express ideas clearly, effectively and confidently during oral presentation. The report, seminar paperwork and oral presentation will be graded. At the end of industrial training, students should be able to demonstrate the application of techniques, skills and tools in urban and regional planning practices professionally and ethically.

DDWN 3173 : Urban Economics

Economics plays an important part in policy planning and decision making at the highest level and at the local level. This course is adapted and applied directly to the planning and development of urban land use. Students will acquire the knowledge on the rationale of location determinants of economic activity, the property investments and the development process. At the end of this course, students will be exposed to the real situation in urban economic with the emphasis on housing and commercial areas since these areas are the main land being used in the urban area.

DDWN 3193 : Planning Law and Practice

In this course, students will be learning on basic planning law and practices in urban and regional planning in Malaysia. The content covers the historical background of Malaysian town and country planning system, legal regulatory framework in town and country planning in Malaysia, organisation of planning administrative authorities, development plan system in Malaysia, development control, planning standards, guidelines and manual, application and processing of planning permission, dispute resolution, Tree Preservation Orders and urban planning and environmental protection. At the end of this course, students should be able to relate the urban planning law to urban planning practice in Malaysia.

DDWN 3203 : Traffic Engineering

This course aims to provide students with knowledge and skills to perform transportation data collection and traffic analysis. The course covers traffic volume study, spot speed study, intersection analysis, road capacity and level of service, Highway Capacity Manual, parking study, access management and traffic calming. At the end of this course students will aware on the traffic engineering elements in designing a layout plan in future.

**DDWN 3075 :Studio 5 - Urban Area Improvement Study
(Pre-requisite DDWN 3908 & DDWN 3914)**

The course content will focus on urban development elements which comprise land use activities, buildings, population and human activity, basic economy, urban infrastructures and utilities, traffic and transportation, landscape and urban design. For this course, theories and knowledge from site planning, urban design, urban engineering, traffic engineering, land use planning, urban economics and planning survey techniques will be used throughout the semester to accomplish the project given. Student will be planning and redesigning the urban area layout and also the land use activities in order to make it more physically, economically and socially vibrant and sustainable. At the end of this course, students will be able to explain critically the whole process related to the urban area improvement study and planning survey needed in this study.

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Quantity Surveying		
2. Final Award		Diploma in Quantity Surveying		
3. Awarding Institution		Universiti Teknologi Malaysia		
4. Teaching Institution		Universiti Teknologi Malaysia		
5. Professional or Statutory Body of Accreditation		Board of Quantity Surveyors Malaysia (BQSM)		
6. Code of Programme		DDWQ		
7. Language(s) of Instruction		Bahasa Melayu and/or English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-govern		
10. Study Scheme (Full Time/Part Time)		Full-time and Part Time		
11. Study Duration		Full time: Minimum : 6 semester (3 Years) Maximum : 9 semester (4½ Years) Part time: Minimum : 7 semester (3½ years) Maximum : 18 semester (9 years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	7	14	15
Short	0	3	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of **THREE (3) credits (GRADE C)** inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects (NOT inclusive of previously listed subjects with credits)

AND

Obtained a pass (GRADE E) in English Language.

OR

Obtained qualification from Polytechnic / Kolej Komuniti / Certificate which, relevant with the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Obtained Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / Certificate which, relevant with Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

	<p><u>OR</u> Passed O-Level with minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of other subjects.</p> <p><u>OR</u> Any related qualifications awarded by the Malaysia Higher Education</p>
--	---

13. Programme Educational Objectives:

Educational Objectives for Diploma in Quantity Surveying programme are designed to ensure graduates are:

- Competent, creative and innovative in solving various problems in quantity surveying fields
- Communicate effectively with leadership skills and self-confidence while striving for career advancement through lifelong learning
- Uphold ethical values and contribute to the needs of organisation and society by participating in various related activities

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge (KW)	Articulate and discuss in a coherent manner on theories, concepts and principles of quantity surveying construction fundamentals	Lecture, Active learning, Problem-based learning	Test, Quiz, Tutorial Work, Studio Work, Academic Visit Report, Project, Homework, Final Exam, Industrial Training Report, Tender Table Document

<p align="center">PLO2 Cognitive skills (CG)</p>	<p>Apply knowledge and skills in the field of law, economics, contract administration, construction technology and measurement to solve issues related to quantity surveying field</p>	<p>Lecture, Active learning, Problem-based learning, Scenario-based learning, Project-based learning, Industrial Training</p>	<p>Test, Quiz, Tutorial Work, Studio Work, Academic Visit Report, Assignment, Project, Laboratory, Homework, Final exam, Industrial Training Report, Practical Evaluation Form, Work Programme, Preliminary Cost Estimate, Bills of Quantities</p>
<p align="center">PLO3 Practical skills (PS)</p>	<p>Demonstrate the skill in analysing and evaluating the issues in quantity surveying and construction field by using the techniques, tools and latest technology in line with institutional and professional practices</p>	<p>Lecture, Active learning, Cooperative learning, Project-based learning, Fieldwork, Industrial Training</p>	<p>Tutorial Work, Studio Work, Project, Homework, Practical Evaluation Form</p>
<p>(b) UTM Graduate Attributes</p>			
<p align="center">Programme Learning Outcomes (PLO)</p>	<p align="center">Intended Learning Outcomes</p>	<p align="center">Teaching and Learning Methods</p>	<p align="center">Assessment</p>
<p align="center">PLO4 Interpersonal Skills (IPS)</p>	<p>Interact effectively and collaboratively in managing relationships in teams and within the organisations</p>	<p>Project-based learning, Industrial Training</p>	<p>Project, Logbook, Practical Evaluation Form</p>
<p align="center">PLO5 Communication Skills (CS)</p>	<p>Communicate effectively and confidently through written, visual and oral presentations to various target groups</p>	<p>Presentation</p>	<p>Project, Presentation, Academic Visit Presentation</p>

<p align="center">PLO6 Digital Skills (DS)</p>	<p>Apply a range of digital applications as well as to seek and process data related to quantity surveying field and studies</p>	<p>Lecture, Active learning, Presentation</p>	<p>Project, Presentation</p>
<p align="center">PLO7 Numeracy Skills (NS)</p>	<p>Demonstrate the ability to use and interpret routine and complex numerical and graphical/visual data</p>	<p>Project-based learning, Industrial Training</p>	<p>Tutorial Work, Assignment, Final Exam, Topical Study Report, Presentation</p>
<p align="center">PLO8 Leadership, Autonomy and Responsibility (LAR)</p>	<p>Demonstrate leadership criteria and able to act as a responsible member of the group in achieving common goal</p>	<p>Problem based learning, Cooperative learning, Fieldwork, Industrial training</p>	<p>Project, Studio Work, Practical Evaluation Form, Presentation, Peer Assessment</p>
<p align="center">PLO9 Personal Skills (PRS)</p>	<p>Identify self-improvement initiatives and possibilities for career development or further education</p>	<p>Active learning, Problem-based learning, Presentation, Industrial training</p>	<p>Presentation, Practical Evaluation Form, Logbook, Supervision, Topical Study Report, Tender Table Document</p>
<p align="center">PLO10 Entrepreneurial Skills (ENT)</p>	<p>Demonstrate the ability to identify new opportunities in dealing with issues related to quantity surveying and construction field with entrepreneurial mindset</p>	<p>Problem-based learning, Project-based learning, Presentation</p>	<p>Project, Presentation, Company Profile</p>
<p align="center">PLO11 Ethics and Professionalism Skills (ETS)</p>	<p>Demonstrate the ability to perform tasks and make decisions ethically, professionally and with integrity</p>	<p>Lecture, Active learning, Presentation, Industrial training</p>	<p>Test, Quiz, Tutorial work, Project, Final Exam, Academic Visit Report, Presentation, Practical Evaluation Form, Logbook</p>

15. Total credit hours to graduate	91 credit hours
16. Programme structures and features, curriculum and award requirements	
<p>This programme is offered on full-time mode and is based on a 2 Semester Academic year with several courses being delivered and assessed in each semester. Assessment is based on coursework and final examination.</p> <p>Assessment (Refer to academic regulation):</p> <ul style="list-style-type: none"> a) Final examination not more than 50 % and course work not more than 60% b) Passing marks for all courses is 40%. c) Skill acquisition: 100% Industrial Training including industrial report and Topical Study <p>Award requirements: Students should achieve a total of 91 credit hours with minimum CPA of 2.00</p>	
17. Our Uniqueness	
<ul style="list-style-type: none"> a) Industrial Training for one (1) semester during Semester 5. b) Accreditation by the Board of Quantity Surveyors Malaysia and Royal Institution of Surveyors Malaysia 	
18. Career Prospects and Career Paths	
<p>Graduates of the programme</p> <ul style="list-style-type: none"> a) Can work as Technical Assistant / Assistant Quantity Surveyor both government sector and private sector. b) May also continue to further their study in various disciplines related to Quantity Surveying such as Bachelor of Quantity Surveying, Bachelor of Construction, Bachelor of Building Surveying, Bachelor of Project Management etc in both local and overseas. 	

19. UTM DIPLOMA++ Programme

Students are given an opportunity to enroll in short courses offered by university during semester break such as Oral Communication, Third Language – Japanese, Mandarin and Arabic, Professional Talk and Career and Guidance Talk.

20. Facilities Available

List of laboratories:

- a. Computer Laboratory (Buildspace Global Estimate, AutoCAD)
- b. Language Laboratory
- c. Civil Engineering Workshop
- d. Studio

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
UHLB1032	Introductory Academic English	2
ULRS 1182*/ UHLM 1122	Appreciation for Ethnicity and Civilisation/ Malay Language for Communication 1	2
DDWQ 1113	Construction Technology 1	3
DDWQ 1123	Draughtsmanship	3
DDWQ 1213	Introduction to Construction Measurement	3
DDWQ 1612	Information Communication Technology	2
Total		15

Note:*Local students register for ULRS while International students register for UHLM.

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UHLB1042	Intermediate Academic English	2
ULRS 1012	Value and Identity	2
DDWQ 1132	Building Services 1	2
DDWQ 1143	Construction Technology 2	3
DDWQ 1223	Construction Measurement 1	3
DDWQ 1322	Principles of Economics	2
DDWQ 1413	Principles of Law, Contract and Torts	3
Total		17

YEAR 2 (SEMESTER 3)

Code	Course	Credit
DDWR 3652	Design Portfolio	2
DDWQ 2153	Construction Materials and Specifications	3
DDWQ 2173	Construction Technology 3	3
DDWQ 2233	Construction Measurement 2	3
DDWQ 2333	Building Economics 1	3
DDWQ 2513	Professional Practice 1	3
Total		17

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWQ 2162	Engineering Survey	2
DDWQ 2182	Building Services 2	2
DDWQ 2192	Principles of Structure	2
DDWQ 2243	Construction Measurement 3	3
DDWQ 2343	Building Economics 2	3
DDWQ 2523	Professional Practice 2	3
Total		15

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWQ 3908	Industrial Training	8
DDWQ 3924	Industrial Training Report and Topical Study	4
Total		12

YEAR 3 (SEMESTER 6)

Code	Course	Credit
ULRF 2XX2	Service Learning & Community Engagement Courses	2
DDWQ 3254	Measurement Project	4
DDWQ 3353	Cost Estimating	3
DDWQ 3423	Construction Law and Contract	3
DDWQ 3633	Principles of Management in Construction	3
Total		15
Total Credits		91

**PRE-REQUISITE
DIPLOMA IN QUANTITY SURVEYING**

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5*	SEMESTER 6**
DDWQ 1113	DDWQ 1143	DDWQ 2173	DDWQ 2162		DDWQ 3254
DDWQ 1123		DDWQ 2153	DDWQ 2192		DDWQ 3353
DDWQ 1213	DDWQ 1223	DDWQ 2233	DDWQ 2243	DDWQ 3908	DDWQ 3423
	DDWQ 1132		DDWQ 2182	DDWQ 3914	DDWQ 3633
	DDWQ 1322	DDWQ 2333	DDWQ 2343		
		DDWQ 2513	DDWQ 2523		
DDWQ 1612	DDWQ 1413				

Notes: * Student must pass all courses in Semester 1, 2, 3 and 4 before proceed to Semester 5.
 ** Student must pass all courses in Semester 5 before proceed to Semester 6.

SYNOPSIS OF CORE COURSES

DIPLOMA IN QUANTITY SURVEYING

DDWQ 1113: Construction Technology 1

This course is to develop an understanding of knowledge in construction technology. Students will become familiar with common construction components and processes. This course covers preliminaries works, excavation works, foundation, frame, floor, staircase and wall. At the end of this course, students will be able to use the diagram to produce and relate it with construction process. This course also provides the platform to develop students' communication skills.

DDWQ 1123: Draughtsmanship

This course will cover the theoretical and practical aspects of technical drawing for building or engineering drawing practices including the process and tools of the production of the drawing manually. This course also introduces the use of computer aided related construction drawing as part of introduction to the concept of Building Information Modelling in relation to quantity surveying. At the end of this course, student will be able to understand the theoretical of construction drawing and produce basic construction drawing manually and using computer aided related construction drawing.

DDWQ 1213: Introduction to Construction Measurement

The aim of this course is to equip the students with the knowledge and skills of measurement and quantification of building works to complement the needs of the profession. This course introduces the concept and principles of measurement and the quantification of building works using simple mathematics and its relationship with the preparation of tender document and costing. The course will focus on the application of the principles of measurement and the introduction to the section in Malaysian Standard Method of Measurement (SMM2). At the end of the course, student will be able to apply the principles of measurement using SMM2.

DDWQ 1612: Information Communication Technology

This course is designed to provide an introduction to computers, basic programming and applications software. Areas of study include computer components, problem solving like macro and basic programming. It also provides students with experience in using a range of computer software packages and helps them develop skills in the choice and use of computing tools for various tasks especially in communication. The course also enables students to seek information from a variety of sources. This course also provides the platform to develop student's communication skills.

DDWQ 1132: Building Services 1

This course will include the study and analysis on factors affecting the building environment, in terms of heat, moisture, sound and lighting and also discuss the utility services installed inside of building which comprises of water supply installation, soil and waste disposal system, electrical and lighting installation, gas supply installation, lightning protection system and communication system. At the end of this course, students will able to use the diagram produce and relate it with building services process. This course also provides the platform to develop students' communication skills.

**DDWQ 1143: Construction Technology 2
(Pre-requisite DDWQ 1113)**

This course is to develop an understanding of knowledge in construction technology. Students will become familiar with common construction components and processes. This course covers stairs, roof including roof cover, door and window, finishes, built in fitment, temporary works and demolition and renovation works. At the end of this course, students will able to using the diagram produce and relate it with demonstration of construction process. At the end of this course, students will able to using the diagram produce and relate it with construction process. This course also provides the platform to develop students' communication skills.

**DDWQ 1223: Construction Measurement 1
(Pre-requisite DDWQ1113, DDWQ1213)**

The aim of the course is to equip the students with the knowledge and skills of measurement and quantification of building works to complement the needs of the profession. This course will further develop the knowledge, understanding and the skill of measurement of construction works according to the current SMM for Building Works for the purpose of preparation of bills of quantities and estimating. At the end of the course, student will be able to apply the principles of measurement and quantification of low-rise building works by using computer aided measurement software.

DDWQ 1322: Principles of Economics

This subject will include the study and discussion on general principles of economics; micro and macroeconomics, including its application in the local and global construction industry. Students will be able to apply the principles in microeconomic regarding market supply and demand as well as understanding the macroeconomic situation and behaviour surrounding the nation like national income and economic control procedures implemented by the government. Students also can adapt the economic knowledge to construction industry.

DDWQ1413: Principles of Law and Torts

The aim of this course is to provide students with the basic principles of law. The objectives are: one; to introduce the main principles of the Malaysian legal system, two; to elucidate certain specified principles of the law of tort, agency and sale of goods relevant to construction works and three; to instil good understanding of the principles of the law of contract. This course is divided into five parts namely: The Malaysian legal system, law of tort, contract, agency and sale of goods. The course also provides the environment to develop students' thinking skills and scholarship in their field.

DDWQ 2153: Construction Materials and Specifications

The aim of this course is to develop an understanding of construction materials and methods of drafting specification. It is intended to enable students to be conversant with the building materials and typical method of specification writing. This course will cover the details on construction materials including classification, sources, manufacturing process, test involved and evaluation on appropriateness of construction materials. The course will also provide a platform to develop students' communication skills and flourish the ability to work effectively as a team to achieve mutual objective.

**DDWQ 2173: Construction Technology 3
(Pre-requisite DDWQ 1143)**

This course is to develop an understanding of knowledge in construction technology. Students will become familiar with common construction components and processes.

This course covers the aspects of design principles, process of construction, fixing, assembling of the various elements and components of external works, civil engineering works and special building. At the end of this course, students will be able to using the diagram produce and relate it with construction process. This course also provides the platform to develop students' communication skills.

**DDWQ 2233: Construction Measurement 2
(Pre-requisite DDWQ1143, DDWQ1223)**

The aim of the course is to equip the students with the knowledge and skills of measurement and quantification of building works to complement the needs of the profession. This course will further develop the knowledge, understanding and the skill of measurement of construction works according to the current SMM for Building Works for the purpose of preparation of bills of quantities and estimating. The course will focus on the application of the principles of measurement and quantification of low-rise building works. At the end of the course, students should be able to applied principles of measurement and quantification of low-rise building works by using computer aided measurement software.

DDWQ 2333: Building Economics 1
(Pre-requisite DDWQ 1322)

The aim of this course is to develop students' knowledge and understanding of the philosophy and concept of building economics in relation to design economics and building morphology, cost implications of site and construction methods as well as other influencing factors. The course also covers the identification and application of different types of cost information such as cost data and cost index including the introduction to development economics. At the end of this semester, student should be able to demonstrate the relationship between different design economics and explain its influence on building and construction costs.

DDWQ 2513: Professional Practice 1

This course introduces the overall quantity surveying program and the program outcomes, the nature of the construction industry, and the roles and responsibilities of the various professionals involved in the construction team. The course also highlights the relevant professional boards and institutions relating to the construction industry and quantity surveying practice. Topics covered also include project development process, the building team, financial institutions, contractors and suppliers' organisations; professional boards and institutions; roles of quantity surveyors at pre and post contract stages, and professional ethics.

DDWQ 2162: Engineering Survey

This course aims to introduce the concept and practical skills of land surveying in building construction projects. It will emphasise on the layout and control of buildings, use and care of surveying instruments, directions, angles, surveying calculations, errors and computations of areas and volumes. At the end of the course, students will demonstrate their ability to set out building structures, earthwork and drainage works. The students should also be familiar with the methods of controlling the vertical alignment of buildings. The course also provides the platform to develop students' ability to work effectively as a team member to achieve mutual objective.

DDWQ 2182: Building Services 2
(Pre-requisite DDWQ 1132)

This course will cover various advanced building services systems in buildings which include fire prevention and fighting system, mechanical conveyors, ventilation and air conditioning, building automation: and also, services systems at community level including sewerage disposal system, water supply and reticulation system, electricity generation and supply system. At the end of this course, student will able to use the diagram produce and relate it with building services process. This course also provides the platform to develop students' communication skills.

DDWQ 2192: Principles of Structure

This course presents the introduction to statics for simple structural analysis and design. It emphasises types of structure, basic principle of structure for single beams, trusses and columns. Design processes of timber, steel and concrete are introduced to structural elements.

**DDWQ 2243: Construction Measurement 3
(Pre-requisite DDWQ2173, DDWQ2233)**

The aim of the course is to equip the students with the knowledge and skills of measurement and quantification of building works and external works to complement the needs of the profession. This course will further develop the knowledge, understanding and the skill of measurement of construction works according to the current SMM for Building Works and civil engineering works using current CESMM for the purpose of preparation of bills of quantities and estimating. The course will focus on the application of the principles of measurement and quantification of infrastructure and high rise and more complex construction works.

**DDWQ 2343: Building Economics 2
(Pre-requisite DDWQ 2333)**

The aim of this course is to develop students' knowledge and understanding of the philosophy and concept of building economics in relation to costing and price analysis. This course also provides the students with the knowledge and skills in preparing cost estimates for simple buildings based on the various methods and techniques. By identifying the factors that influence the cost, the students will be able to determine the appropriate cost data and its sources to be applied in the estimates. This course covers all aspects of cost management during pre-construction and construction stages of project development.

**DDWQ 2523: Professional Practice 2
(Pre-requisite DDWQ 2513)**

This course introduces the process and procedures at pre and post contract stage. This course also aims to develop knowledge and understanding of the terms and conditions in standard forms of construction contract. It further enhances students' skills, competencies, and ethical and professional values in interpreting the terms and conditions into administrative process and procedures. The course consists of two main parts: part one relates to pre-contract processes that include tendering, documentation and contract documents; part two covers works related to post contract administration. This course covers quantity surveying practices based on currently applicable in Malaysian construction.

DDWQ 3908: Industrial Training**(Pre-requisite - all courses in Semester 1 - 4)**

This course exposes the students to pre and post-contract practice and procedures of quantity surveying practices. Students will be attached to quantity surveying firms or government departments for a period of twenty (20) weeks. At the end of the industrial training, students should be able to demonstrate the application of techniques, skills and tools in quantity surveying practices professionally and ethically and identify quantity surveying working procedures. They should also be able to function effectively in a team, seek information and acquire contemporary knowledge, present information and express ideas clearly, effectively and confidently

DDWQ 3924: Industrial Training Report and Topical Study**(Pre-requisite - all courses in Semester 1 - 4)**

This course requires the students to produce a report on the industrial training carried out for twenty (20) weeks duration. The report will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or departments. This course also requires students to produce topical study report on topics related to quantity surveying and the construction industry. After completing the course, the students should be able to acquire and present information as well as express ideas clearly, effectively and confidently.

DDWQ 3254: Measurement Project

The aim of the course is to expose the students to the real practice of preparation of Bills of Quantities as part of the Tender Table Document. This course will further provide the students the exposure and experience in the process of preparation of a Tender Table Document for a specified construction project based on the current practice. The course will focus on the application of the principles of measurement and quantification of construction works in the preparation of Bills of Quantities for residential and/or medium rise commercial building. The course also provides the platform to develop students' communication and leadership skills, and the ability to work effectively as a team member to achieve mutual objective.

DDWQ 3353: Cost Estimating

The aim of this course is to develop students' knowledge and understanding on the principles, techniques and systematic procedures of building up rates. This course is designed to provide students with the knowledge and skills in building up rates and prices of various items for simple buildings and basic civil engineering works. By identifying the factors that influence the cost, the students will be able to determine the appropriate cost data and its sources to be applied in pricing of works.

DDWQ 3423: Construction Law and Contract

The aim of this course is to introduce the students the important clauses in construction contract. The objectives are: one; to explain to the students the principles and the implications of the main terms of construction contract, two; to highlight the roles, duties and liabilities of the parties involved in the construction contracts. The main standard forms of contract referred to in this course are those currently used locally and internationally. At the end of this course, the students are expected to be able to analyse legal and ethical issues arise in construction contract.

DDWQ 3633: Principles of Management in Construction

This course provides knowledge and develops understanding of the principles of management including the current changes and developments. It emphasises the elements of organisation, decision making, planning, leadership and motivation. It also serves as a platform to develop students' skills and competencies in management. The course also provides the environment to develop student's ability to create good relationship, interaction with colleague and work effectively with other people to achieve mutual objective.

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Architecture		
2. Final Award		Diploma in Architecture		
3. Awarding Institution		UTM		
4. Teaching Institution		UTM		
5. Professional or Statutory Body of Accreditation		Malaysian Qualifications Agency (MQA)		
6. Code of Programme		DDWR		
7. Language(s) of Instructional		Bahasa Melayu and English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-govern		
10. Study Scheme (Full Time/Part Time)		Full time and Part time		
11. Study Duration		Full time: Minimum : 5 semester (2½ Years) Maximum : 8 semester (4 Years) Part time: Minimum : 7 semester (3½ years) Maximum : 18 semester (9 years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	5	7	14	15
Short	0	3	0	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of **THREE (3)** credits (**GRADE C**) inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects (NOT inclusive of previously listed subjects with credits)

AND

Obtained a pass (GRADE E) in English Language.

OR

Obtained qualification from Polytechnic / Kolej Komuniti / Certificate which, relevant with the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Obtained Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / Certificate which, relevant with Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

	<p style="text-align: center;"><u>OR</u></p> <p>Passed O-Level with minimum THREE (3) credits (GRADE C) inclusive of Mathematics and TWO (2) of other subjects.</p> <p style="text-align: center;"><u>OR</u></p> <p>Any related qualifications awarded by the Malaysia Higher Education</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> • <i>Candidates for Diploma in Architecture programme need to pass a test and an interview carried out by the university.</i>
--	---

13. Programme Educational objectives:

A graduate of this programme should be able to:

- Competent, creative, critical and innovative in problem solving in the field of architectural fields.
- Communicate effectively with leadership skills and self-confidence while striving for career development through life-long learning related to architecture field.
- Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities in architecture field.

14. Programme Learning Outcomes (PO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
<p>PLO1 Knowledge and Understanding (KW)</p>	<p>Articulate and discuss knowledge, principles and theory in relation to culture, environment, technology and practice in architecture and other related field.</p>	<p>Studios, critical discussion sessions, lectures, tutorials, seminars, site visits, visits to agencies and architectural firms, workshop, directed reading and independent research.</p>	<p>Examination, test, quiz, assignment, drawings, oral and visual presentations, report, seminar presentations, discussions, problem-based exercise, group works, independent projects, examinations portfolio review.</p>
<p>PLO2 Cognitive Skills (CG)</p>	<p><i>Apply architecture or related knowledge, skills, principles and theory for identifying, analyzing, composing, creating, designing, developing, formulating, integrating, synthesizing, solving and visualizing.</i></p>	<p>Studios, critical discussion sessions, lectures, tutorials, seminars, site visits, laboratory works, assignments, projects and problem-based learning.</p>	<p>Examination, test, quiz, assignment, drawings, oral and visual presentations, report, seminar presentations, discussions, problem-based exercise, group works, independent projects, examinations portfolio review.</p>

<p align="center">PLO3 Practical Skills (PS)</p>	<p align="center"><i>Conduct field works and using architectural or related skills in designing and developing design.</i></p>	<p>Studios, critical discussion sessions, workshop, cooperative and problem-based learning.</p>	<p>Design projects (research process and drawings), visual and oral presentations, seminar presentations, problem-based exercise, workshops, fieldworks, reports, practical training reports, discussions, design tasks, quizzes, examinations portfolio review, internal and external examinations.</p>
<p>(b) UTM Graduates Attributes</p>			
<p align="center">Programme Learning Outcomes (PLO)</p>	<p align="center">Intended Learning Outcomes</p>	<p align="center">Teaching and Learning Methods</p>	<p align="center">Assessment</p>
<p align="center">PLO4 Interpersonal Skills (IPS)</p>	<p align="center">Interact effectively and collaboratively in managing relationships in teams and within the organizations in architecture and related field.</p>	<p>Studio projects, individual projects, group projects, field work, critical discussion sessions, independent research, tutorial, seminar research and presentations, lectures, laboratory works, cooperative and problem-based learning.</p>	<p>Design projects (research process and drawings), visual and oral presentations, seminar presentations, problem-based exercise, workshops, fieldworks, reports, practical training reports, discussions, design tasks, examinations, portfolio review, peer assessment.</p>
<p align="center">PLO5 Communication Skills (CS)</p>	<p align="center">Communicate effectively and confidently through written, visual and oral presentations to different audiences in architecture field.</p>	<p>Studio projects, individual projects, group projects, independent research, tutorial, seminar research and presentations, critical discussion sessions, lectures, laboratory works, cooperative and problem-based learning.</p>	<p>Graphical, multimedia and oral presentations, multimedia simulation, architectural drawings, technical drawing, design project presentation, assessment crits, portfolio review, design workshops and seminar presentations.</p>

<p align="center">PLO6 Digital Skills (DS)</p>	<p>Apply a range of digital applications as well as to seek and process data related to work and studies in architecture field.</p>	<p>Lectures, critical discussion sessions, project supervision, lectures, tutorials, seminars, design workshops, site visits, case studies, laboratory works, directed reading, simulation exercise, computer aided exercise, individual research, problem-based learning.</p>	<p>Design project, design reports, audio visual and oral presentations, peer assessment, design tasks, laboratory report, independent project report, group assignments, group projects.</p>
<p align="center">PLO7 Numeracy Skills (NS)</p>	<p>Use and interpret routine and complex numerical and graphical / visual data in architecture and related field.</p>	<p>Lectures, tutorials, seminars, independent research projects, group research projects, laboratory works, problem-based learning, design workshops, innovative design projects and architectural case studies.</p>	<p>Independent project report, group assignments, group projects, test, examination, participation observation.</p>
<p align="center">PLO8 Leadership, Autonomy and Responsibility (LAR)</p>	<p>Demonstrate leadership criteria and be able to act as a responsible member of the group towards achieving common goal.</p>	<p>Design projects, lectures, independent research projects, group research projects, site visits, case studies, architectural forums, design workshops and design studio.</p>	<p>Independent project report, group assignments, group projects, test, examination, participation observation.</p>
<p align="center">PLO9 Personal Skills (PRS)</p>	<p>Identify self-improvement initiatives and possibilities for career development or further education.</p>	<p>Studio works, seminars, discussions, lectures, tutorials, seminars, independent research projects, group research projects, laboratory works, problem-based learning.</p>	<p>Independent project report, group assignments, group projects, test, examination, participation observation.</p>

<p>PLO10 Entrepreneurial Skills (ENT)</p>	<p>Demonstrate the ability to identify new opportunities in dealing with issues related to architecture and related field with entrepreneurial mindset.</p>	<p>CPD (continuous professional development) projects, GSD (generic skill development) projects, management project, design studio, competition, independent research project, group research projects, developing case studies, design and design workshop, architectural forum and seminars.</p>	<p>Attitude observation, report, design assignment, CPD/GSD point scheme, design solutions, assignments, test, examinations, presentation and interviews.</p>
<p>PLO11 Ethics and Professionalism (ETS)</p>	<p>Demonstrate the ability to perform tasks and make decisions in architecture field ethically, professionally and with integrity.</p>	<p>Design projects, independent research projects, group research projects, site visits, case studies, architectural forums, design workshops and design studio.</p>	<p>Design assignment, CPD/GSD point scheme, project report and presentations, test, examinations, effectiveness observation, participation observation, role play observation, peer assessment, votes, awards and recognition.</p>
<p>15. Total credit hours to graduate</p>		<p>90 credit hours</p>	

16. Programme structures and features, curriculum and award requirements

The programme is offered in a full time mode and based on a 2 Semesters Academic Year with several subjects being delivered and assessed in each semester.

Assessment (Refer to UTM's academic regulation)

- i. Lecture-based Courses:
Final Examination (not less than 40%)
Course work
- ii. Skill-based Courses:
100% Course work
- iii. Studio Courses:
100% Projects
As a pre-requisite to the next level of studio courses, students should obtain minimum grade of D+ in Studio courses.

Award requirements:

To graduate, a student should obtain a total of 90 credit hours with minimum CPA of 2.00

17. Our Uniqueness

- a. A strategic location in Kuala Lumpur adds value to the programme in terms of accessibility to expertise and references.
- b. Programmes and courses offered in UTM KL promote interaction across the multi-disciplined students.
- c. Emphasizing on character building other than the creative design ability (teamwork, leadership, confidence, oratory skills).

18. Career Prospects and Career Paths

Graduates of the programme:

- a. Are eligible to work as Assistant Architect, Architectural Technician and Designer in public and private sectors, or
- b. May further their studies to degree and professional courses to qualify as an architect locally and abroad.

19. UTM Diploma++ Programme

Students are given an opportunity to enroll in short courses offered by university during semester break such as Oral Communication, Third Language – Japanese, Mandarin and Arabic, Professional Talk and Career and Guidance Talk.

20. Facilities Available

- a. Studio
- b. Computer and CAD Laboratory
- c. Workshops (Concrete, Timber and Steel)
- d. Gallery
- e. Resource Center

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
UHLB 1032	Introductory Academic English	2
ULRS 1182*/ UHLM 1122*	Appreciation for Ethics & Civilisation/ Malay Language for Communication 1	2
DDWR 1116	Fundamental Design 1	6
DDWR 1113	Structure & Construction 1	3
DDWR 1313	Theory of Design	3
DDWR 1412	Architectural Communication	2
Total		18

Note:*Local students register for ULRS while International students register for UHLM.

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UHLB 1042	Intermediate Academic English	2
ULRS 1012	Value and Identity	2
DDWR 1126	Fundamental Design 2	6
DDWR 1223	Construction Practice	3
DDWR 1323	Architecture History & Theory	3
DDWR 1422	Graphic & Digital Communication	2
Total		18

YEAR 2 (SEMESTER 3)

Code	Course	Credit
DDWR 2138	Design 1	8
DDWR 2233	Architectural Heritage of Malaysia	3
DDWR 2333	Environmental Science & Sustainability	3
DDWR 2432	Basic Architectural Computing	2
DDWR 3652	Design Portfolio	2
	Total	18

YEAR 2 (SEMESTER 4)

Code	Course	Credit
ULRF 2XX2	Service Learning & Community Engagement Courses	2
DDWR 2148	Design 2	8
DDWR 2243	Structure & Construction 2	3
DDWR 2343	Building Services 1	3
DDWR 2442	Architectural Computing 2	2
	Total	18

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWR 3158	Design 3	8
DDWR 3253	Working Drawing	3
DDWR 3353	Building Services 2	3
DDWR 3452	Architectural Leadership & Entrepreneurship	2
DDWR 3552	Design Competition	2
Total		18
Total Credits		90

Note:

*Local students will enroll for ULRS while international students will enroll for UHLM.

**PRE-REQUISITE
DIPLOMA IN ARCHITECTURE**

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5
DDWR 1116	DDWR 1126	DDWR 2138	DDWR 2148	DDWR 3158
DDWR 1113	DDWR 1223	DDWR 2233	DDWR 2243	DDWR 3253
DDWR 1313	DDWR 1323	DDWR 2333	DDWR 2343	DDWR 3353
DDWR 1412	DDWR 1422	DDWR 2432	DDWR 2442	DDWR 3452
		DDWR 3652		DDWR 3552

SYNOPSIS OF CORE COURSES

DIPLOMA IN ARCHITECTURE

DDWR 1116: Fundamental Design 1

Fundamental Design 1 is an introduction to the architectural design elements and principles, idea development, ergonomic and anthropometric. The studio program provides theoretical information, knowledge and practices of architectural design; element and principle. Throughout the semester, there are 3 stages of learning process. First, introductory exercise on design element and principle through the series of hands-on exercises in the form of drawings and model making. Second, ideation, inspiration and conceptual development as well as introduction of basic design structure. Third, ergonomic and anthropometric study and application aspects where the student final project is to design for themselves; one person object/structure. These exercises and task are to develop the students skill in manipulate, demonstrate and articulate the basic design knowledge. The learning methods are including workshop, material experiment; structural, form expression, design process, design documentation, architectural illustration and academic trip. This course emphasizes on the conventional free-hand skills in technical presentation as well as creative visual images.

DDWR 1126: Fundamental Design 2 (Pre-requisite DDWR 1116 Fundamental Design 1)

The Fundamentals 2 design is to strengthen students' understanding of design elements and principles, theory of design, environment, technology, and introduction to site inventory and analysis, landscape design, construction materials, indoor and outdoor design. Throughout the semester, students need to perform architectural or related skills in designing and developing design. Students need to show ideas verbal and visual clearly, listen actively and respond accordingly, as well as use variety of media in board and model presentations. This exercise is also look to develop students' thinking for alternative ideas and creative solutions. There are 3 stages of learning process. First, introductory exercise on site inventory and analysis. Second, indoor structure design and materials and third, landscape and outdoor structure design and materials. These exercises and task are to develop the students skill in manipulate, demonstrate and articulate the basic design knowledge. Learning includes workshop, seminar, trip, visit, material experiment; structural, form expression, design process, design documentation and architectural illustration. This course emphasizes on the conventional free-hand skills in technical presentation as well as creative visual images and model making.

DDWR 2138: Design 1
(Pre-requisite DDWR 1126 Fundamental Design 2)

This Design 1 is a continuation from Fundamental Design 2 studio where the learning will integrate with the other related core courses. Students will undergo several groups and individual exercises including site inventory, case study analysis and end up with dwelling design as well as understanding of public, semi-public, semi-private and private spaces. This exercise is to enhance the students' skills to identify and explore their architecture knowledge and ability to explain various basic designs to more complex designs that emphasize ergonomics and anthropometrics. Learning includes workshop, seminar, trip, visit, construction & materiality, material experiment; customer response, structural, form expression, design process, design documentation and architectural illustration. This course emphasizes on the transition from manual to digital skills in technical presentation as well as creative visual images and laser cut model making which all of these are able to display during critique sessions and develop their ideas throughout the semester.

DDWR 2148: Design 2
(Pre-requisite DDWR 2138 Design 1)

This course is the continuation from DDWR 2138, Design 1. In this course, students are to be introduced to a small commercial building design in an urban/suburban setting (Maximum 2 storey). Students need to show sensitivity to social, environmental and contextual issues responding to the site. Students will undergo several groups and individual exercises including site inventory, 2 to 3 intermediate to corner shop houses/offices lot façade design and end up with medium small commercial building design as well as understanding of public, semi-public, semi-private and private spaces. This exercise is also look to enhance the students' skills to explore their architecture and ability to synthesize various basic designs to more complex designs that emphasize ergonomics and anthropometrics. Learning includes workshop, seminar, trip, visit, construction & materiality, material experiment; customer response, structural, form expression, design process, design documentation and architectural illustration. This course emphasizes on the digital skills in technical presentation as well as creative visual images and laser cut model making.

DDWR 3158: Design 3
(Pre-requisite DDWR 2148 Design 2)

This Design 3 is a continuation from Design 2 studio where the learning will integrate with the other related core courses. Students will undergo group and individual exercises including site inventory, case study analysis and finish up with medium size mid-span community building design. This exercise is also look to enhance the students' skills to explore their architecture and ability to synthesize various basic designs to more complex designs that emphasize site planning, space planning, complex form making as well as interpret public, semi-public, semi-private and private spaces. Learning includes workshop, seminar, trip, visit, construction & materiality, material experiment; customer response, structural, form expression, design process, design documentation and architectural illustration. This course emphasizes on the digital skills in technical presentation as well as creative visual images and 3d printed model making.

DDWR 1113: Structure & Construction 1

This course is an introduction of a basic understanding of basic structural design and conventional construction techniques. The course provides a theoretical knowledge of current construction techniques as well as the related technologies and its application on a simple building design. Throughout the semester, the course covers a various topics of basic structural understanding and basic conventional construction types such as a construction of a brick, timber, concrete and steel. It does also allow the students to explore the construction approaches and use of structural materials in current construction industry especially in Malaysia.

DDWR 1313: Theory of Design

The "Design" is viewed as the core discipline of architectural practice. The course is an introduction to various essential knowledge and methods of design within the architectural context. It will cover the process and related parameters such as design thinking, processes, methods and knowledge on design creativity, research and writing that needs to be understood in order to produce a substantial design product that inspiring in relation to man and environment.

DDWR 1412: Architectural Communication

The course is to introduce the students to the use of communication and its role in the architecture. These will be the basic concepts of manual drawing skills, architectural graphic skills, verbal presentation and model making. The goal of this series is to provide students knowledge in relation to culture, environment, technology and practice in architecture field. Students need to explain the design and develop architecture design and adapt it in practice. Develop architectural communication with base general skills framed in a structured delivery system. Student need to discover knowledge, design and provide solutions clearly in appropriate form.

DDWR 1223: Construction Practice

The programme for this independence course exposes students to practices in the workshop and the real life of construction on site (students are required to observe and record what they have seen in the form of daily activities logbook and a final comprehensive construction report). The exposure on these hands-on practices provides awareness to students on various trades and difficulties in preparing construction work on site (construction field operations) and workshop (exposure to the equipment's used). This course deals with the principles and the fundamental knowledge of construction practices that include the construction-related problems and data managements. Learning through self-experience and teamwork (peer learning) are as well included. Students also will embark themselves in simple hands on task related to the brick and concrete construction such as brick layering, cement fero, concrete mixture and others.

DDWR 1323: Architectural History & Theory

The course provides an overview of history, theory and language of the architectural world from the classical to present; with some understanding and awareness of the social and cultural values, political traditions, technological advancement, economic achievements as well as the environment that influence the buildings and landscape.

DDWR 1422: Graphic & Digital Communication

The course is to introduce the students to the use of different communication skills and to what role it plays in architecture. The topics provided will be the basic concepts of manual drawing skills, architectural graphic skills, verbal presentation and digital graphic computing. The goal of this series is to provide students with base general skills framed in a structured delivery system. Student need to discover knowledge, design and provide solutions clearly in appropriate form.

DDWR 2233: Architectural Heritage of Malaysia

The course is conducted based on research and documentation activities by the students. The measured drawing exercise is important for analysing and recording the architectural heritage of Malaysia for future reference. The case study building selected normally has its own unique characteristics that need to be documented. The course is a combination of field work and studio work where for the first few weeks of the semester, the students will be doing the measuring exercise on site in groups and later they will be working together spending time in the studio to produce a complete documentation.

DDWR 2333: Environmental Science & Sustainability

The course focus on presenting awareness of climate and weather in built environment as well as elaborating the fundamentals of environmental physic and its application related to climatic responsive building design. Climatic elements such as sun-path, solar heat gain, relative humidity, airflow, natural lighting and sound on built environment will be elaborated. Exploring and learning from the primitive solutions towards understanding the basic passive climatic design principles and developing contemporary sustainable architectural solutions will be demonstrated to achieve thermal comfort and energy efficient building design. The course also intended to provide opportunity to conduct basic experiments on specific aspects of building performance with respect to climate, thermal comfort, natural ventilation, lighting and acoustics, both indoor and outdoor.

DDWR 2432: Basic Architectural Computing

The aim of the course is to enable students to apply a variety of basic architecture software which introduces scenarios for students to deal with in relation to producing more effective usage of the software perspective and an introduction towards CAD presentation. Students are assessed in their ability to integrate the use of various different software in order to produce more comprehension architecture presentation. Further assessment includes the ability to employ 2D visual applications appropriately.

DDWR 2243: Structure & Construction 2

Basically this course is an extension of basic understanding of conventional construction method and technologies in previous course of structure and construction 1 (DDWR 1113). This course gives an exposure to the student on basic information/ knowledge and the principles of medium scale building structural design. Throughout the semester, the course covers the area of construction techniques and structural materials of timber, reinforced concrete, steel and brick as well as some advance construction technology methodologies such as an IBS, engineered timber, tensile and others. It does also allow the students to explore the construction approaches and use of structural materials in current construction industry especially in Malaysia.

DDWR 2343: Building Services 1

This course gives basic understanding on basic building services for both small scaled buildings as well as for medium complex buildings. This course will help students to develop knowledge of the role of building services in determining building performance and help student to develop understanding how various types of building services equipment work by observation and case study of the existing building. Topics covered include: water supply system, electrical supply system, air-conditioning system, Fire safety system, ventilation system and Intelligent Building System. Since the lecture emphasizes on the principles of the building systems, students are expected to engage in extra reading for better comprehension. Energy Efficient is a recurring theme throughout the course. This course will help students to determine the best system to be applied in their studio projects.

DDWR 2442: Architectural Computing 2

This course will be exposed to basic 3D and BIM software to assist them in producing a complete set of architectural working drawings with correct drawing conventions and format. The course also introduce advanced scenarios for students to deal with in relation to produce more effective use of software prescribed and better CAD technical drawings and presentation.

DDWR 3253: Working Drawing

Working drawing consist of two-dimensional orthogonal projections of the building or component such as plans, sections and elevations. A course that enable students to understand architectural drawings, structural drawings, civil drawings, mechanical drawings, electrical drawings etc. Students need to demonstrate techniques, skills and theories of design into architectural design work. The projects need students to produce systematic work progress clearly, effectively and comprehensive.

DDWR 3353: Building Services 2

This course gives emphasized on building sciences and services of the principle services systems for complex buildings of commercial and industrial nature as it is the continuation of what students had learned from previous course of Building Service 1. Students will be exposed to more specific elements of building service from medium to high-rise building type in terms of the vertical transportation such as lifts, and escalators , and learn about universal design facilities which response to the Malaysian Standards. All of this topic will wrap up with the knowledge of building maintenance and management that will leads students on how to produce a better building envelop. In this course, students will collaborate effectively with others and demonstrate intellectual independence and autonomy to solve problems / address industries issues and imperatives. Each topic is merely to highlight the Malaysia Building Rules and Regulation. Topic covered: Vertical Transportation, Universal Design, Guide to Fire Protection, Telecommunication, Building Management System and Building Maintenance System.

DDWR 3452: Architectural Leadership & Entrepreneurship

This is a non-lecture-based subject that addresses the need for a non-academic way of teaching and learning. It provides the opportunity for students to learn and develop their leadership skill throughout task given by the lecturer as well as the entrepreneurship value (marketing). It provides means of measuring quality of self-confident, leader-to-be and enterprising skill. This course also will shape the students to be able to generate incomes through market design products and services.

DDWR 3552: Design Competition

This is a non-lecture-based subject that addresses the need for a non-academic way of teaching and learning. It provides the opportunity for students to learn and test their ability to compete and win design competition, individually or in a group. It provides means of measuring quality of academic excellence. The culture of competing and winning particularly at international level would boost students' competitiveness and elevate their sense of confidence. The competition also provides the platform for students to design project outside their local environment.

DDWR 3652: Design Portfolio

This is a non-lecture-based subject that addresses the need for a non-academic way of teaching and learning. It enhances students to produce portfolio in order to market themselves. This course will help students to prepare, organise, strategise and manage their curriculum vitae and works portfolio. It provides means of measuring quality of academic excellence. The culture of competing and marketing themselves in real world would boost students' competitiveness and elevate their sense of confidence.

DEPARTMENT OF

**COMPUTER
SCIENCE AND
SERVICES**

PROGRAMME SPECIFICATIONS

1. Programme Name		Diploma in Computer Science		
2. Final Award		Diploma in Computer Science		
3. Awarding Institution		University Technology Malaysia		
4. Teaching Institution		University Technology Malaysia		
5. Professional or Statutory Body of Accreditation		Malaysian Qualifications Agency (MQA)		
6. Code of Programme		DDWD		
7. Language(s) of Instruction		Bahasa Melayu and English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full Time and Part Time		
11. Study Duration		Full Time : Minimum : 6 semesters (3 Years) Maximum : 9 semesters (4 ½ Years) Part Time : Minimum : 8 Semester (4 Years) Maximum : 18 Semester (9 Years)		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	8	14	14
Short	0	4	-	9

12. Entry Requirement

A) GENERAL REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualification, inclusive of a credit in Bahasa Melayu and a pass in History at the SPM level

B) SPECIFIC REQUIREMENTS

Obtain a pass in Sijil Pelajaran Malaysia (SPM) / equivalent qualifications, with a minimum of **THREE (3) credits (GRADE C)** inclusive of Bahasa Melayu and the following subjects:

- Mathematics
- ONE (1) of the subjects (NOT inclusive of previously listed subjects with credits)

AND

Obtained a pass (GRADE E) in English Language.

OR

Obtained qualification from Polytechnic / Kolej Komuniti / Certificate which, relevant with the Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Obtained Sijil Kemahiran Malaysia (SKM) Level 3 MQF / Sijil Kolej Komuniti (SKK) Level 3 MQF / Certificate which, relevant with Diploma programme offered by obtaining a minimum cumulative grade point average (CGPA) of 2.00.

OR

Passed O-Level with minimum **THREE (3) credits (GRADE C)** inclusive of Mathematics and TWO (2) of other subjects.

	<u>OR</u> Any related qualifications awarded by the Malaysia Higher Education <i>Note:</i> <i>* Candidates who do not have credit in Mathematics at SPM level or equivalent can be accepted if the certificate program contains Mathematics equivalent to Mathematics at SPM level.</i>
--	---

13. Programme Objectives

Graduates of this program should be able to:

- Competent, creative and innovative in solving various problems in the field of Computer Science.
- Communicate effectively with leadership skills and self-confidence while striving for career development through life-long learning.
- Uphold ethical values and contribute to the needs of the organization and society by participating in various related activities.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 Knowledge and Understanding (KW)	Demonstrate the knowledge of computer science and in the development as computing semi-professional or entrepreneur.	Lectures, tutorials, laboratory work, directed reading, internet searching, active, cooperative and problem based learning, Independent and group project.	Tests, Quizzes, Examinations, Assignments, Presentation, Industrial Training Report and supervisor evaluation.
PLO2 Cognitive Skills (CG)	Demonstrate the ability to apply theoretical principles of Computer Science for analyzing, designing and developing computer system and adapt it in practice.	Laboratory work and group projects.	Assignments, Project Report, Industrial Training and Industrial Training Report.

<p>PLO3 Practical Skills (PS)</p>	<p>Apply computing practical skills in computer hardware management, algorithm, programming, software design and development using current technologies.</p>	<p>Laboratory work and group projects.</p>	<p>Laboratory Reports, Assignments, In Lab Test, Project Report, Industrial Training and Industrial Training Report.</p>
<p>(b) Generic Skills</p>			
<p>Programme Learning Outcomes (PLO)</p>	<p>Programme Learning Outcomes (PLO)</p>	<p>Programme Learning Outcomes (PLO)</p>	<p>Programme Learning Outcomes (PLO)</p>
<p>PLO4 Interpersonal Skills (IPS)</p>	<p>Interact effectively and collaboratively in managing relationships in teams and within the organizations.</p>	<p>Group projects, service learning and supervised learning.</p>	<p>Project Reports, Industrial Training Report, Industrial Training Presentation, Log Book, Supervisor Evaluation.</p>
<p>PLO 5 Communication Skills (CS)</p>	<p>Communicate effectively in oral or written with various stakeholders and all levels of society.</p>	<p>Lecture, active learning, self directed learning, student centered learning, group projects and supervised learning.</p>	<p>Project and Assignment Reports, Industrial Training Report, Industrial Training Presentation, Log Book, Supervisor Evaluation.</p>
<p>PLO 6 Digital Skills (DS)</p>	<p>Apply a range of digital applications as well as to seek and process data related to work and studies.</p>	<p>Group assignment, projects, supervised learning.</p>	<p>Project and Assignment Reports, Industrial Training Report.</p>
<p>PLO 7 Numeracy Skills (NS)</p>	<p>Use and interpret routine and complex numerical and graphical/visual data in the computing field.</p>	<p>Individual and group projects.</p>	<p>Project Reports.</p>

<p align="center">PLO 8 Leadership, Autonomy & Responsibility (LAR)</p>	<p>Demonstrate leadership qualities and be able to act as a responsible member of the group towards achieving common goals.</p>	<p>Lecture, active learning, self directed learning, student centered learning, group projects, supervised learning.</p>	<p>Project Reports, Peer evaluations and Industrial Training Report and Presentation.</p>
<p align="center">PLO 9 Personal Skills (PRS)</p>	<p>Identify self-improvement initiatives and possibilities for career development or further education</p>	<p>Lecture, active learning, self directed learning, student centered learning, group projects, self access and supervised learning</p>	<p>Project Reports, Presentation, Industrial Training Supervisor Evaluation.</p>
<p align="center">PLO 10 Entrepreneurial Skills (ENT)</p>	<p>Demonstrate the ability to identify new opportunities in dealing with issues related to computing field with entrepreneurial mindset</p>	<p>Lecture, active learning, self directed learning, student centered learning, group projects, case study.</p>	<p>Project report and presentation, Case study report Assignment Reports.</p>
<p align="center">PLO 11 Ethics and Professionalism Skills (ETS)</p>	<p>Demonstrate the ability to perform tasks and make decisions ethically, professionally and with integrity.</p>	<p>Group projects, assignment, supervised learning.</p>	<p>Project and assignment report, Industrial Training presentation, Industrial Training Supervisor Evaluation</p>
<p>15. Total credit hours to graduate</p>		<p align="center">90 credit hours</p>	

16. Programme structures and features, curriculum and award requirements

This programme is offered full-time based on a 2 Semester Academic Session with several courses being delivered and assessed in each semester.

Assessment:

Courses:

60% Coursework

40% Final examinations

Skill Acquisition (lab embedded in the course)

Passing marks for all courses is 40%. (Refer to UTM Academic Regulations)

Award requirements:

Students should achieve a total of 90 credit hours with a minimum CPA of 2.00 inclusive of industrial training (12 credit hours). Course code: DDWD 3908 & DDWD 3914.

17. Our Uniqueness

This program blends theory and practice, and real world experience, plus covers key technical knowledge in techniques of computing skills, programming, website creation, software development and all its related current technologies. The systematic development of innovative thinking and creative problem solving skills is given emphasis in the program. Students will be trained not only in the technical areas of specialization but also in self-discipline, Graduate Success Attributes and entrepreneurship. Students will gain valuable industry exposure and keep abreast with industry practices via industrial training.

18. Career Prospects and Career Paths

Graduates of the program can work as a programmer, software developer, IT officer, web developer, technical support staff, computing entrepreneur and any related jobs in the computing industry. The graduates may also further their studies in Bachelor of Computer Science or a bachelor degree in any related field at local or foreign universities.

19. UTM Diploma ++ Program

Students are given the opportunity to enroll in non credited short courses offered by university during semester breaks.

20. Facilities available

List of laboratories:

- a. Linux Laboratory
- b. Information Technology Laboratory
- c. Multimedia Laboratory
- d. Computer Maintenance Laboratory
- e. Language Laboratory

21. Support for Students and Their Learning

Personal support

Academic Advisor
Counseling

Infrastructure support

Internet access
e-learning
Digital library
Health care and Recreational

Financial support

Perbadanan Tabung Pendidikan Tinggi Negara (PTPTN)
Jabatan Perkhidmatan Awam (JPA)
Yayasan Negeri
Pusat Zakat Negeri

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULRS 1012	Value and Identity	2
UHLB 1032	Introductory Academic English	2
DDWD 1243	Digital Logic	3
DDWD 1683	Introduction to Computer Science	3
DDWD 1573	Programming Fundamental	3
DDWS 1013	Mathematics For Computer Science	3
Total		16

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULRS 1182*/ UHLM 1122*	Appreciation For Ethics And Civilization / Malay Language For Communication 1	2
DDWR 3652	Design Portfolio	2
UHLB 1042	Intermediate Academic English	2
DDWD 1223	Computer Organization and Assembly Language	3
DDWD 1693	Discrete Mathematics	3
DDWD 1603	C++ Programming	3
Total		15

Note: *Local students register for ULRS while International students register for UHLM

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULRF 2XX2	Service Learning & Community Engagement Courses	2
DDWD 2483	Database	3
DDWD 2623	Object-Oriented Programming Using Java	3
DDWD 2733	Data Structures and Algorithms	3
DDWD XXX3	Elective I	3
Total		14

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWD 2673	Data Communication and Networking	3
DDWD 2663	Operating System	3
DDWD 2453	System Analysis and Design Methods	3
DDWD 2703	Web Programming	3
DDWD 2713	Mobile Programming	3
DDWD XXX3	Elective II	3
Total		18

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWD 3773	Data Analytics	3
DDWD 3343	Computer Security	3
DDWD 2653	VB.NET Programming	3
DDWD 3783	Special Issues in Computer Science	3
DDWD XXX3	Elective III	3
Total		15

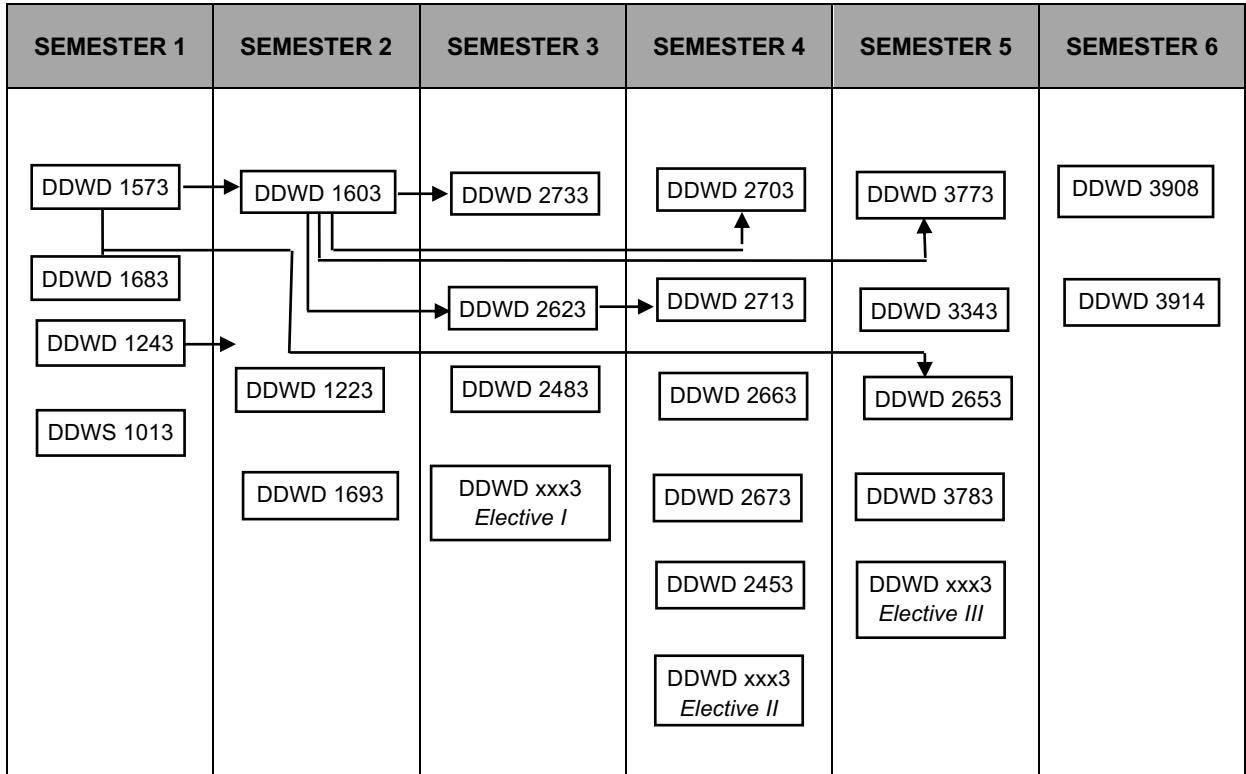
YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWD 3908	Industrial Training	8
DDWD 3914	Industrial Training Report	4
Total		12
Total Credits		90

LIST OF ELECTIVE COURSES

Code	Course Name	Credit	Pre Requisite
DDWD 3353	Computer Maintenance	3	-
DDWD 2763	Human Computer Interaction	3	-
DDWD 3723	Software Development	3	DDWD 2453
DDWD 1533	Computer Graphics	3	-
DDWD 2563	Computer Animation	3	-
DDWD 2543	Digital Audio Video	3	-

**PRE-REQUISITE
DIPLOMA IN COMPUTER SCIENCE**



SYNOPSIS OF CORE COURSES

DIPLOMA IN COMPUTER SCIENCE

DDWS 1013 : Mathematics For Computer Science

This course covers the mathematical topics in algebra and calculus that are related to the study of computer science. These include the set theory, number systems, functions and polynomials, solving linear equations and quadratic equations. Further topics are vectors, matrices, differentiation and integration of simple functions and their applications.

DDWD 1683 : Introduction To Computer Science

This course will introduce students to computer science technology as well as its uses in daily life both at home and at work. Various aspects of computer science encompassing hardware, software, network, communications, internet, multimedia, graphics and systems applications will be introduced. The syllabus is primarily added with the learning of selected microcomputer applications (theory and practical) such as word processor, electronic spreadsheet and others. Lastly, this course will introduce the necessary knowledge and skills required for organizing and carrying out entrepreneurial activities, to develop the ability of analyzing and understanding business situations.

DDWD 1243 : Digital Logic

This course introduce student to digital and analog concept, basic logic gates, number system and code, code conversion, BCD code, Gray code, Boolean algebra, Boolean variable, truth table, Karnaugh map SOP and POS, minimization combination logic circuit, adders, comparator, decoder, encoder, code converter, multiplexers, demultiplexers, parity generators, latch, edge triggered flip-flop, clock signal, asynchronous and synchronous counter.

DDWD 1573 : Programming Fundamental

This course provides the students with the basics of computer hardware, software, computer programming languages and program development methods with the emphasis on C language. Topics highlighted are designing algorithms using Pseudo code, Flowchart, NS-Diagram and Decision Table. The basic programming concept of data types, variables and constant, input and output, assignment operators, types of operator, basic control structures such as selection structure, nested selection, looping, nested loop and are introduced and applied using C language. At the end of the course, students should be able to design an algorithm and construct a C language program respectively for a given set of problems.

DDWD 1603 : C++ Programming
(Pre-requisite DDWD 1573)

This course introduces students to the fundamentals of programming using C++ language, which include basic elements of C++, input/output formatting, selections, loops, functions, arrays, pointers, c-strings and records. Emphasis will be on the basic concept of programming, different techniques to write program in C++ language, understanding the algorithms, programming development and producing the suitable output. The course also exposes students to some basic of classes and objects. At the end of the course students should be able to write a program to solve given problems using C++ language.

DDWD 1693 : Discrete Mathematics

This course introduces students to the principles and applications of discrete structure in the field of computer science. The topics that are covered in this course are set theory, proof techniques, relations, functions, recurrence relations, counting methods, graph theory, trees and finite automata. At the end of the course, the students should be able to use set theory, relations and functions to solve computer science problems, analyze and solve problems using recurrence relations and counting methods, apply graph theory and trees in real world problems and use deterministic finite automata finite state machines to model electronic devices and problems.

DDWD 1223 : Computer Organization and Assembly Language
(Pre-requisite DDWD 1243)

This course introduces students the concept of computer system evolution, computer system function and component, internal memory, external memory, input/output device, central processing unit, instruction set: characteristics, function, addressing mode and format, CPU structure and function, control unit, assembly language programming, assembly language format, arithmetic operation, addressing, comparison instruction, string and loop, sub-routine, integer arithmetic, floating-point arithmetic, bit and character manipulation, macro definition, and interrupt.

DDWD 2673 : Data Communications and Networking

This course presents the principles and applications in the area of data communications and networking. It concentrates on data communication concepts, issues, and technologies. In particular, it emphasizes the importance and need of simple, clear communication in today's world. At the end of this course the student should be able to comprehend the terminology, concepts, applications and metrics of data communications and computer networks, demonstrate knowledge of principles of computer network architectures and data communications, understand the technical aspects of data transmission in networks, demonstrate and understand network protocols and architecture, understand security issues in computer networks and recognize the present and future impact of advancements in data communications and networks.

DDWD 2453 : System Analysis and Design Method

This course is designed to provide students the opportunity to understand about the systems analysis and design methods. Expanded coverage of emerging technologies, such as agile methods, cloud computing, and mobile applications, and traditional approaches to systems analysis and design. Emphasizes critical thinking and IT skills in a dynamic, business-related environment and refine the IT skills student's need for success in today's competitive business world.

**DDWD 2623 : Object - Oriented Programming Using Java
(Pre-requisite DDWD 1603)**

This course is designed to expose the students to software development by covering object-oriented analysis design with the UML, and the fundamentals of object-oriented programming in Java. It will emphasize on the concept of object-oriented, OOAD using UML: Use Case Diagram & Class Diagram, basic of programming and object-oriented programming. For object-oriented programming, it will expand into classes and objects, strings, inheritance and polymorphism, abstract classes and interface. At the end of this course, students should be able to demonstrate and apply knowledge by analyzing, designing and implementing using an object-oriented approach. The students should also be able to acquire and manage relevant information to build Java applications from various sources to accomplish an assigned task.

**DDWD 2703 : Web Programming
(Pre-requisite DDWD 1603)**

The course is designed to present fundamentals, technologies and components for web application developments. Standard HTML for content creation, CSS for content presentation, JavaScript for client-side logics, PHP a server-side language for business logics and data processing and MySQL for database processing.

**DDWD 2713 : Mobile Programming
(Pre-requisite DDWD 2623)**

This course introduces students to principles of mobile application design and development. This is a project-oriented course in which students will learn application development on the Android platform. Emphasis will be on the most common tools and techniques for writing Android applications. The course also exposes students to common user interface elements, storage strategies for persistent information, including use of the available SQLite Database features and data sharing. At the end of the course students should be able to design and develop mobile apps.

**DDWD 2733 : Data Structures and Algorithms
(Pre-requisite DDWD 1603)**

This course introduces students to the knowledge of data structure and algorithms method or technique for solving decision making problems in the computer field using C++ programming including list and linked lists, stacks, queues, recursions, trees, searching, graphs and sorting. Emphasis will be on the basic concept of data structure, operations of model development, algorithms or pseudo-code design, programming development and present the output. At the end of the course students should be able to choose the suitable data structure to solve problems.

DDWD 2483 : Database

Introduction to Database, The Database Environment, Relational Model, SQL: Data Manipulation, SQL: Data Definition, Query-By-Example (QBE), Database Planning, Design and Administration, Entity relationship Modeling, Normalization, Methodology, Transaction Management and develop an application using any DBMS.

DDWD 2663 : Operating System

This course focuses on the fundamental concepts of the operating system and its functions. Topics include basic operating systems design and implementation such as process management, memory management, file management, secondary storage management, I/O management and file management. Students will acquire hands-on practice on UNIX operating system, manipulating Unix File System, UNIX Shell and Text Editors, create shell scripts, and programming under UNIX.

DDWD 3773 : Data Analytics**(Pre-requisite DDWD 1603)**

This course provides an overview of introduction to data science. The course focuses on using computational methods and statistical techniques to analyze massive amounts of data and to extract knowledge. It provides an overview of foundational computational and statistical tools for data acquisition and cleaning, data manipulation, data analysis and evaluation, visualization and communication of results, data management and big data systems. Upon completion of this course, students will complete the data science process from data to knowledge and give students hands-on experience with Python Language.

DDWD 3783 : Special Issues In Computer Science

This course provides students with current issues related to computer science. The key objective of this course is to equip the students with the knowledge in current issues mainly the research done to solve related problems. Based on the given topic in current research, the students should argue and think critically about what could be other alternatives besides the current solutions.

DDWD 3343: Computer Security

This course is designed to provide students with the fundamentals of computer security. It covers material related to general computer security concepts, basics of cryptography, program security, operating system security, database security, network security, and operational/organizational security. Students will gain and acquire knowledge, theories, concepts and applications in computer security and controls and should be able to carry out a small scale project to investigate the current practices in the area of security and controls in the industries.

DDWD 2653 : VB.NET Programming**(Pre-requisite DDWD 1573)**

This course is designed to provide students the opportunity to examine visual basic programming, learn how to create windows applications using the Visual Basic.Net, modify existing windows applications with VB.Net for applications, and understand the practical application of VB.Net features. Additionally, the course is concerned with programming logic, documentation, design choices, and the Systems Development Life Cycle.

SYNOPSIS OF ELECTIVE COURSES

CHOOSE 3 ONLY

DDWD 3723: Software Development

(Pre-requisite DDWD 2453)

This course is a comprehensive software development course to solve the real problem mainly using Agile Methodologies. Students will identify the concept of software application development, analyze real problems and design the solution. Students will construct an application by synthesizing the design and generating various levels of software documentations such as Software Development Plan (SDP), Software Requirement Specification (SRS) and Software Design Document (SDD). Students are required to develop other skills such as communication skills and team working.

DDWD 3353: Computer Maintenance

This course provides the students the knowledge of computer hardware, types of computer motherboard form factor, types of memory and basic installation, the computer I/O components, types of CPU and socket, assembly & disassembly of PC and basic troubleshooting/ installation. This course will also cover the fundamentals concepts in purchasing PCs, basic understanding of computer lab setup and safety purposes as well as latest technology related to the course.

DDWD 2763 : Human Computer Interaction

This course is designed to present the physical and informational aspects of human computer interaction especially on the user interface. It emphasizes the process of user interface design and development including user-centered design and task analysis. The course also stresses on the user interface evaluation and experiments through group as well as individual project work.

DDWD 1533 : Computer Graphics

This course introduces the concept of graphic design, graphics design components, elements of design and principles of graphics design. Topic on typography and layout of graphic design that will be utilized across all applications. Students will be introduced to major graphic design applications such as Logo/ symbols/ pictogram, Visual Identity/Branding; Poster; Book jackets and Magazine covers and Packaging design etc. This course helps develop hands-on skills on how to design/solve graphic design applications by using the graphic design drawing software such as Adobe Illustrator CS3.

DDWD 2543 : Digital Audio Video

This course introduces students to basic theoretical and applications in audio and video technology especially digital medium; the usage of digital audio editing software; process, hardware and software handling/involvement in producing digital audio and video; students are also required to produce a simple digital audio production and digital video production. The course emphasizes on audio and video technologies, applications of the technology in producing meaningful pieces of audio and video files.

DDWD 2563 : Computer Animation

This course helps students to develop their skills on how to create creative animation figures based on the basic procedures, guidelines and principles. Students will become more creative and innovative in designing new animation characters. Besides, it is important to make the still pictures move to perform an animation. Practically, students will learn how to create and edit animations by using Macromedia Flash. Students will improve their sense of observation, timing and motion through the real art of animation to create strong believable animation pieces. A good understanding of motion is an important foundation for using computers and technology to their full potential for the creation of animation.

SYNOPSIS OF INDUSTRIAL TRAINING COURSES**DDWD 3908 : Industrial Training**

This course exposes students to real industrial environments. Students are attached to a host organization for a period of 16 weeks and undergo training relevant to the aspects of work. Students are expected to apply the computing and information technology skills learned from classroom to real industrial environment. The performance of each student during the periods of his/her Industrial Training is evaluated jointly by the faculty staff, and the representatives from employer organizations.

DDWD 3914 : Industrial Training Report

This course requires the students to produce a report on the industrial training carried out by them. The report will cover tasks undertaken and experiences gained by the students during their period of training at the respective firms or department. After completing the report, the students should be able to present information and express ideas clearly, effectively and confidently.

SCIENCE AND SERVICES

SYNOPSIS OF SCIENCE COURSES

DDWS 1012 : Engineering Mathematics 1

This course consists of the foundation of mathematics required for studies in Diploma of Chemical Engineering. Lessons include functions, solving equations and inequalities, conic sections, trigonometry and polar form.

DDWS 1112 : Engineering Mathematics 1

This course consists of foundation of mathematics required for studies in Diploma of Electrical Engineering. Lessons include functions, solving equations, conic sections, trigonometry and polar form. At the end of this course, students are exposed to the related applied problems in foundation mathematics.

DDWS 1113 : Engineering Mathematics I

This course consists of the foundation of mathematics required for studies in Diploma of Civil and Mechanical Engineering. Lessons include the topics on functions, solving equations, conic sections, trigonometry, polar coordinates, series and binomial theorem, matrices and determinants and complex numbers. At the end of this course, students are exposed to the related applied problems in engineering and solve the problems using mathematical foundation acquired.

DDWS 1022 : Engineering Mathematics 2

(Prerequisite: DDWS 1012)

This course emphasizes active thinking about mathematics concepts, through practice with mathematical problems and appropriate presentation of mathematical calculation. Topics consists of complex numbers, matrices and determinants, solving system of linear equations using inverse method, Cramer's Rule and Gaussian elimination method. The study of vectors, sequence, series and binomial theorem are also included. Students will be exposed to related applied problems.

DDWS 1122 : Engineering Mathematics 2

(Prerequisite: DDWS 1112)

This course emphasizes active thinking about mathematics concepts, through practice with mathematical problems and appropriate presentation of mathematical calculation. It provides the study of sequences and series, the binomial expansion, concept of matrices and determinants, system of linear equation, vectors and complex numbers.

DDWS 1023 : Engineering Mathematics II
(Prerequisite: DDWS 1113)

This course will introduce and provide students with higher mathematical concepts related to engineering and increase students' competency in using mathematical techniques, solving mathematical and engineering problems. Topics consists of differentiation and integration of elementary and transcendental functions, first and second order of linear differential equations, method of Laplace transforms, Fourier series and partial derivatives. At the end of this course, students are exposed to the associated applied problems.

DDWS 1013 : Mathematics for Computer Science

This course covers the mathematical topics in algebra and calculus that are related to the study of computer science. These include the set theory, number systems, functions and polynomials, solving linear equations and quadratic equations. Further topics are vectors, differentiation and integration of simple functions and their applications.

DDWS 1132 : Mathematics for Surveyor 1

This course includes the topics of introduction to algebra, solving equations, conic sections, trigonometry, coordinate geometry and polar coordinate. At the end of this course, student will acquire basic knowledge of algebra and understand on solving algebra and geometry problems.

DDWS 1142 : Mathematics for Surveyor 2
(Prerequisite: DDWS 1132)

This course includes matrices, vectors, and systems of linear equations, differentiation and integration. At the end of this course, student will acquire basic knowledge of matrices, differentiation and integration.

DDWS 2043 : Mathematics for Surveyor 3
(Prerequisite: DDWS 1142)

This course focuses on calculus, both differential and integral, with emphasis on differentiation of multi-variable equations or partial differentials and double integral, including the first and second order linear differential equations. At the end of this course, students will acquire basic calculus, the statistics for data organization, representation, description and analysis, including testing the hypothesis and using the least squares method to determine a regression model.

DDWS 1412 : Chemistry

This course emphasizes on classification of matter, atoms, molecules, ions and mole concept. The topics covered include, stoichiometry, concentration units, atomic structure, periodic table, chemical bonding, gas laws, chemical equilibrium, and acids-bases. The course will also provide three (3) laboratory works to enhance the theoretical aspect and the opportunities to teach through interaction with students at the bench.

DDWS 1413 : Chemistry

This course emphasizes classification of matter, atoms, molecules, ions and mole concept. The topics covered include balancing of chemical equation, stoichiometry, concentration units, atomic structure, periodic table, chemical bonding, gas laws, chemical equilibrium, acids-bases and electrochemistry. The course will also provide four (4) laboratory works to enhance the theoretical aspect and the opportunities to teach through interaction with students at the bench

DDWS 2423 : Analytical Chemistry

This course introduced to quantitative chemical analysis, with emphasis on wet chemistry and instrumental methods. Topics in wet chemistry include introduction to analytical chemistry, sampling, sample preparation, data analysis, gravimetric analysis and volumetric analysis. The course also introduces the principles, instrumentation, and application of chromatographic and spectroscopic methods such as gas chromatography, HPLC, ultraviolet- visible spectroscopy, atomic absorption and atomic emission spectroscopy.

DDWS 1712 : Physics

This course emphasizes the application of Newton's Laws of motion and fundamental physics principles in various kinds of motions such as linear motion, free fall, projectile motion, uniform circular motion, satellite motion, simple harmonic motion and wave motion. Definition of Newton's Laws, Hooke's Law and other concepts commonly encountered in physics and engineering. The forces include friction, normal reaction, weight, tension, and components of forces. The principles to be studied are the principle of conservation of total energy, total linear momentum, work-energy theorem, impulse-momentum theorem. Other related concepts to be covered include free body diagrams, equilibrium and non-equilibrium forces, inclined planes and connected bodies for objects at rest and in motion. A few experiments are included in the course to enhance the theoretical aspects of the course and enable students to develop their team working, communication and report writing skills.

DDWS 1713 : Physics

This course emphasizes the application of Newton's Laws of motion and fundamental physics principles in various kinds of motions such as linear motion, free fall, projectile motion, uniform circular motion, satellite motion, simple harmonic motion and wave motion. Definition of Newton's Laws, Hooke's Law and other concepts commonly encountered in physics and engineering. The forces include friction, normal reaction, weight, tension, and components of forces. The principles to be studied are the principle of conservation of total energy, total linear momentum, work-energy theorem, impulse-momentum theorem. Other related concepts to be covered include free body diagrams, equilibrium and non-equilibrium forces, inclined planes and connected bodies for objects at rest and in motion. A few experiments are included in the course to enhance the theoretical aspects of the course and enable students to develop their team working, communication and report writing skills.

DDWS 1733 : Physics for Surveyor

This course is designed to provide understanding, knowledge and exposure on the theory and concept of physics related to geomatics engineering and its associated technologies. The course covers topics of physical quantities and measurements, electrostatics, electromagnetics wave and sounds wave with its physical interaction, gravitation, surface interaction, orbital mechanics and optics. Students will be exposed to the fundamentals of physics through lectures and discussion in each topic. At the end of this course students should relate and apply the physics theory in land surveying field.

SYNOPSIS OF LANGUAGE COURSES**UHLB 1032 : Introductory Academic English**

This beginner course is designed to develop students' receptive and productive academic skills. For receptive skills, students will be guided to listen to and read academic texts as well as respond to questions based on the texts. For the productive skill of speaking, students will be given guidance on how to deliver a short speech based on topics of their choice. This course will also familiarise students with paragraph writing that describes visual/non-linear information and essay writing on problem-solution topics. It also provides enrichment activities to complement the development of both receptive and productive skills through self-accessible materials. At the end of the course, students should be able to apply these skills in current and future academic settings.

UHLB 1042: Intermediate Academic English

This course reinforces and enhances the development of students' receptive and productive skills relevant to academic contexts. The skills are integrated in various task-based activities. These include reading academic texts critically for specific information, listening for main ideas and specific information, writing essays and descriptions based on various non-linear texts, taking notes and participating in group discussions. In addition, the course fosters independent learning activities facilitated by online resources. At the end of the course, students should be able to incorporate relevant skills learned to perform tasks in academic context.

SYNOPSIS OF UNIVERSITY COURSES

ULRS 1012: Value and Identity

This course highlights the main core of UTM which is the driving force to creative and innovative human capital to meet the country's needs for the future. The main thrust is Integrity, Synergy, Excellence and Sustainability (ISES- Integrity, Synergy, Excellence and Sustainability). The foundation that underlies this course is the value of integrity, value and self-identity that containing all forms of prevent abuses of power in everyday life as well in organizations such as corruption; and strengthen the measure of anti-corruption prevention. This course also emphasizes the importance of value systems and ethics, which includes aspects of relationships between people and managing / appreciating diversity. In addition, the course also emphasizes holistic solutions to current issues, transformation and innovation, philosophy of science and technology which is based on values, integrity and identity towards achieving goals in produce graduates who excel in terms of physical, emotional, spiritual and intellect. This effort is in line with the country's commitment in implementing the Agenda Sustainable Development (SDG) by 2030 through the Shared Prosperity Vision 2030 in providing a good standard of living for all citizens.

ULRS 1182: Appreciation for Ethics and Civilisation

This course discusses about ethical concepts from different civilisation perspectives. This course prepares students to appreciate the ethics and civilisation inherent in the diverse ethnic communities in Malaysia It aims to identify the systems, stages, development and culture of a nation in strengthening social cohesion. In addition, discussions on contemporary issues in the economic, political, social, cultural and environmental aspects from an ethical and civil perspective that can produce students who are morally and professionally. The application of appropriate high impact education practices (HIEPs) is used in the delivery of this course.

UHLM 1122 : Malay Language for Communication 1

This course trains international students to communicate in Basic Malay Language which covers daily life situations. Students will be introduced to the basic spoken and written in the Malay Language. Teaching and learning will be carried out in the form of lectures, tutorials, assignments and student experiences inside and outside the classroom. At the end of the course, students are expected to be able to communicate and write essay using simple sentences effectively.

SYNOPSIS OF SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES

ULRF 2902: Kelana Siswa / Scout

This course will expose students on leadership training, scout law and treaty, patrolling system, scout ceremony, knots-tying and scout pilot project paper, camping and learning services as set out in the Malaysian Scout Association Training Scheme.

ULRF2142: ICT Communities Services

This course exposes students to the knowledge of ICT (Information, Communications and Technology) and its implementation in the development of a community in general.

ULRF2092: STEM Literacy

STEM Literacy course (Science, Technology, Engineering and Mathematics) will expose students to the STEM disciplines plan activities and carry out STEM activities to reignite interest in science and mathematics in the society. Students are required to perform activities such as clinics, seminars or others related to STEM to share knowledge with the community in addition to other interaction activities with the community.

ULRF2492: Photo Creative Services

This course will give exposure about photography skills in terms of theory and technical. Students will experience practical exercises.

ULRF2342: Mosque Management and Community Development

This course exposes students to group work skills, leadership skills, lifelong learning and ethical skills. All of these skills will be built through learning about mosque management and community development. Life-long learning also covers self -management and leadership in society; organization mosques and financial management. Team working skills and leadership skills applied through community service projects regarding management mosque activities.

ULRF2262: Information Exploration

This course exposes the skills and knowledge of information seeking covering various sources of print and electronic materials. These information retrieval skills build skills students to be more effective and systematic in the search for information and materials that include printed materials and electronic materials provided in the library for the student learning process generally.

ULRF2012: Financial Literacy

This course exposures the basic concepts and goals of personal finance, which include individual financial risk management and individual and zakat tax planning. Through various assignments individually assigned each week, students are expected to be able to formulate goals their personal finances that are useful to them in the future

ULRF2782: Trekking

This course exposes the concept of trekking from theoretical and technical aspects. The basics of this skill will be learned by the students practically through the prescribed exercises.

ULRF2062: Iqra'

This course introduces the student to learn Quran easily and fast through Iqra' method and apply the official Uthmani' punctuation marks and reading signs in reading the Quran. All these skills will be built through learning the Qur'an using the Iqra Module.

ULRF2522: Theatre

This course will expose students to the features of welfare through acting. Students will be able to organize an effective team/group through the preparation and implementation of an acting or script and able to communicate and interact effectively before and while on stage.

ULRF2762: Tennis

This course introduces students to the basics of skills, rules, games and organizing programs related to tennis. Through the learning gained from lectures and practical, students need to practice their knowledge and skills in community based on programs such as workshops, clinics and competition organization.

ULRF2322: Drug Prevention Education

This course introduces the basic knowledge of Drug Prevention Education which covers aspects of safety, health, social and legislation especially drug prevention education knowledge, types of drugs, effects/ consequences of taking drug on humans, law enforcement, profiling an addict and ex -addict, the process of rehabilitation/ treatment and implementation of activities. This course is conducted with a service-learning approach which students need practicing knowledge of drug prevention education by running projects community development within the appropriate scope. In addition, students need to demonstrate good communication skills and current public speaking teamwork in implementing a volunteer and service project community.

ULRF2192: Digital Workforce

This course in particular is to build entrepreneurial skills by doing digital work through crowdsourcing methods. This course builds digital work skills group and leadership, adaptability skills, lifelong learning and ethical skills. Finally, this course as well implement experiential learning through service-learning programs. Students will transfer the knowledge learned to the community through the activities carried out.

ULRF2112: Social Media and Rebranding

This course addresses the theory and practice of Social Media Branding. The primary goal of the course is to serve as a foundation for further exploration in social media and branding. Students will learn how to manage their brand either personal brand or business brand on social media and how to create a social media strategy. Students will learn various theoretical frameworks towards an optimal social media strategy in a specific industry through discussions and case studies. Main topics include the importance of branding strategy and the social media advertising, the benefits of listening to social media users as the new customer relationship platform and aligning institutional objectives and goals.

ULRF2282 Sustainability Community

This Sustainability Community course is a course that involves a community service project especially related to community development sustainable. Besides, it is also involving student activities that aimed to fulfill the needs of the identified community as well to help develop their academic skills and commitment to sustain the community development. Students will work in groups and will be able to function effectively in social and professional contexts. Development soft skills will also be emphasized when managing projects such as skills to work in groups and solve problems that are particularly in environmental aspects of a community. Students will eventually be required to make reflection on the project to strengthen their learning process and make improvements in the future.

ULRF2182 Drone Technology

Along with the development of industrial revolution 4.0 and the challenges that will be faced by our country, so this course aims to prepare UTM students with understanding and skills related to drones. Student will be technically exposed to drone technology and its use in help solve problems in society. This course is to build teamwork and leadership skills, adaptability skills, lifelong learning, and ethical skills. All these skills will be built through assignments and activities set in this course. Teamwork skills, leadership and scholarship are measured through hands-on projects where students must assemble and build a drone that can works. This course also applies experiential learning through the program service learning. Students will transfer the knowledge they have learned to community through the activities carried out. All this will be done with the guides and professional ethics that need to be practiced when handling service learning and drones to ensure safety aspects maintained.

 <http://space.utm.my/diploma>