UTM
UNIVERSITI TEKNOLOGI MALAYSIA

School of Professional and Continuing Education (*UTMSPACE*)

ACADEMIC GUIDEbook

CENTRE FOR DIPLOMA STUDIES

SESSION 2018 / 2019

http://www.ppd.utmspace.edu.my

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

School of Professional and Continuing Education (*UTMSPACE*)

ACADEMIC GUIDE BOOK

CENTRE FOR DIPLOMA STUDIES

SESSION 2018 / 2019

http://www.ppd.utmspace.edu.my

DIPLOMA PROGRAMME
UTM KUALA LUMPUR

ACADEMIC GUIDEBOOK

Twenty Edition: 2018/2019

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 / 4357

Fax No: 03-2615 4990

Website

http://www.ppd.utmspace.edu.my

CONTENTS

FALSAFAH PENDIDIKAN NEGARA

Pendidikan di Malaysia adalah suatu usaha berterusan ke arah memperkembangkan lagi potensi individu secara menyeluruh dan bersepadu untuk mewujudkan insan yang seimbang dan harmoni dari segi intelek, rohani, emosi dan jasmani (JERI) berdasarkan kepercayaan dan kepatuhan kepada Tuhan. Usaha ini adalah bagi melahirkan Bangsa Malaysia yang berilmu pengetahuan, berketrampilan, berakhlak mulia, bertanggungjawab dan berkeupayaan mencapai kesejahteraan diri dan keluarga, memberi sumbangan keharmonian dan kemakmuran masyarakat dan negara.

UNIVERSITY PHILOSOPHY

The divine law of Allah is the foundation for science and technology. UTM strives with total and unified effort to develop excellence in science and technology for universal peace and prosperity, in accordance with His Will.

UNIVERSITY VISION

To be recognised as a world-class centre of academic and technological excellence.

UNIVERSITY MISSION

To be a leader in development of human capital and innovative technologies that will contribute to the nation's wealth creation.

UNIVERSITY MOTTO

innovative. entrepreneurial. global

UTMSPACE PHILOSOPHY

Education is a lifelong learning process, therefore, UTMSPACE believes that each individual who has the interest and is willing to further develop himself, can be taught regardless of age limit and the academic history

UTMSPACE VISION

To be an international center of excellence in lifelong learning

UTMSPACE MISSION

To provide quality Lifelong Learning programmes that are widely accessible, customized and flexible that meet customer needs and expectations.

UTMSPACE MOTTO

Spearhead Lifelong Learning

UTM GRADUATE ATTRIBUTES

Communication Skills

Communication skills incorporate the ability to communicate effectively in Bahasa Melayu and English across a range of contexts and audiences.

CS1	Ability to present idea clearly, effectively and confidently through written and modes.
CS2	Ability to listen actively and respond accordingly.
CS3	Ability to make clear and confident presentation appropriate to audience.
CS4	Ability to use technology in presentation.
CS5	Ability to negotiate and reach agreement.
CS6	Ability to communicate with people of different culture.

Critical Thinking and Problem Solving Skills

Critical thinking and problem solving incorporate the ability to think critically, logically, creatively and analytically.

CTPS1	Ability to define and analyze problems in complex, overlapping ill-defined domains and make well-supported judgment.
CTPS2	Ability to apply and improve on thinking skills, especially skill in reasoning, analyzing and evaluating.
CTPS3	Ability to look for alternative ideas and solutions.
CTPS4	Ability to think outside the box.
CTPS5	Ability to understand and adapt to the culture of a new community and working environment.

Teamworking

Teamworking incorporates the ability to work with other people with different background to achieve a common goal.

TW1	Ability to establish good rapport, interact with others and work effectively with them to meet common objectives.
TW2	Ability to comprehend and assume the inter-changeable role of leaders and followers.
TW3	Ability to recognize and respect the attitudes, action and beliefs of others.

Information Management and Lifelong Learning Skills

Information management and lifelong learning incorporate the ability to continue learning independently in the acquisition of new knowledge and skills.

LL1	Ability to seek and manage relevant information from a variety of sources.
LL2	Ability to accept new ideas and to learn independently in the acquisition of new knowledge and skills.
LL3	Ability to develop an inquisitive mind driven by a passion for knowledge acquisition.

Entrepreneurship Skills

Entrepreneurship incorporates the ability to analyze situations and recognize opportunities to use one's knowledge and skills for business opportunities.

ES1 Ability to identify business opportunities.

Leadership Skills and Proactiveness

Leadership and proactiveness incorporate knowledge of the basic principles of leadership and application of the traits of leadership in one's interaction with others.

LS1 Ability to demonstrate basic knowledge of leadership.

LS2 Ability to take and to get others engaged.

Ethics and Integrity

Ethics incorporate the ability to apply high ethical standards in professional practice and social interactions.

ET1 Ability to act ethically and with a high sense of social responsibility.

ET2 Ability to analyze and make ethical decisions when solving problems.

ET3 Ability to understand the economic, environmental and socio-cultural impacts of professional practice.

FACILITIES IN UTM KUALA LUMPUR

UTM Kuala Lumpur Library
UTM Kuala Lumpur Library is a branch library situated at UTMKL, Jalan Semarak 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.

WELCOMING SPEECH

Assalamualaikum and Greetings,

Welcome to the PPD, School of Professional and Continuing Education, Universiti Teknologi Malaysia also known as **SPACE**. Thank you for taking some time to visit our portal.

UTM's home grown diploma programmes have evolved to become not only, as a globally recognized programmes but also producing competent semi-professional employees in their respective fields. A total of 14 programmes covering both the engineering and non-engineering fields at diploma level are offered. For this new session, PPD UTMSPACE introduced a new programme – Diploma in Technology Management (Accounting). All 14 programmes have been revised according to the guidelines of the Malaysian Qualification Agency (MQA) and will be continuously reviewed to meet the needs of the nation.

I sincerely hope that this portal will disseminate information on the entry requirements, curriculum, career path of our mainstream programmes as a public higher education institutions in Malaysia. Our programmes are also offered by approved education partners amongst private higher institutions.

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

Professor Dr Othman bin Che Puan
Dean,
School Of Professional and Continuing Education (SPACE)

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 Semarak, 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 16 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 Electronic Engineering
- Diploma in Electrical Engineering (Power)
- Diploma in Electrical Engineering (Mechatronic)
- Diploma in Mechanical Engineering

Department of Management
- Diploma in Property Management
- Diploma in Technology Management
- Diploma in Technology Management (Accounting)

Department of 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 (Information Technology)
- Diploma in Computer Science (Multimedia)

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.

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
School of Professional and Continuing Education (UTMSPACE)

ORGANIZATION CHART
PUSAT PENGAJIAN DIPLOMA, SPACE

HEAD OF DEPARTMENTS AND UNITS

HEAD OF PROGRAMME

PUSAT PENGAJIAN DIPLOMA, SPACE

DEPARTMENT OF ENGINEERING

DIPLOMA IN CIVIL ENGINEERING

Mohd Daniel Anuar bin Sulaiman

DDWA

DIPLOMA IN ELECTRICAL ENGINEERING (MECHATRONICS)

Norhaslinda binti Harun

DDWB

DIPLOMA IN ELECTRONICS ENGINEERING

Roslina binti Rahiman

DDWE

DIPLOMA IN ELECTRICAL ENGINEERING (POWER)

Othman bin Jais

DDWK

DIPLOMA IN MECHANICAL ENGINEERING

Raja Putri Melissa binti Raja Mustaffa

DDWJ

DEPARTMENT OF MANAGEMENT

DIPLOMA IN PROPERTY MANAGEMENT

Nik Hamidi bin Nik Mustapha

DDWF

DIPLOMA IN TECHNOLOGY MANAGEMENT

Madihah binti Md Fadil

DDWG

DIPLOMA IN TECHNOLOGY MANAGEMENT (ACCOUNTING)

Hasliza binti Hussin @ Awi

DDWW

DEPARTMENT OF COMPUTER SCIENCE AND SERVICES

DIPLOMA IN COMPUTER SCIENCE (INFORMATION TECHNOLOGY)

Faizal Asli bin Mohd Rizab @ Hassan

DDWC

DIPLOMA IN COMPUTER SCIENCE (MULTIMEDIA

Syed Ardi bin Syed Yahya Kamel

DDWZ

HEAD OF PANEL

Zurai'ni binti Dahlan

SCIENCE AND MATEMATICS

COURSE COORDINATOR

Yazid bin Jaafar

GENERAL COURSE

HEAD OF COORDINATOR

AMINUDIN BIN ALI

CO-CURRICULUM AND SERVICE LEARNING

COURSE COORDINATOR

Khairuzilah binti Khalil

ENGLISH LANGUAGE

DEPARTMENT OF GEOMATIC AND BUILT ENVIROMENT

DIPLOMA IN URBAN AND REGIONAL PLANNING

Siti Fatimah Yusi bt Bityamin

DDWN

DIPLOMA IN ARCHITECTURE

Kamarul Ariffin bin Abdul Kadir

DDWR

DIPLOMA IN QUANTITY SURVEYING

Siti Nurhuda bint Abd Wahid

DDWQ

DIPLOMA IN LAND SURVEYING

Mohd Rosydi bin Abdullah

DDWL

LIST OF DEPARTMENT & STAFFS

DEPARTMENT OF ENGINEERING

Dr. Sahnius bt Usman
Ph.D (Electrical Eng.) UKM
Sarjana (Kej. Elektrik) (UTM)
Sarjana Muda (Mekatronik) (UTM)
sahnius.kl@utm.my
Head of Department

Abdul Razak bin Mohd Sidek
B.Sc Hons.Maritime Studies (Tech.) Uni. of Wales (UK),
B.Mech. Eng. (UTM)
abrazak.kl@utm.my

Alam Faizli bin Mohd Zain
M.Eng. (Control Systems)(Sheffield),
B.Eng.(Sheffield)
alamfaizli.kl@utm.my

Aminudin bin Ali
M. Sc (Construction Management) (UTM)
B. ScBuilding Heriot-Watt Univ, UK
Dip. in Building (UiTM)
b-aminudin@utm.my

Arba'iah bt Inn
M. Eng. (Comm. & Computer) (UKM),
Diploma Lanjutan Kej. Elektrik (ITM),
Dip. Kej. Elektrik (Elektron ik) (ITM)
arbaiah.kl@utm.my

Azahar bin Nawawi
M.E.E (UTM),
B.Eng.(Electronic and Electrical Eng.)(Strathclyde),
Diploma Kej. Elektrik (Kuasa)(UTM)
azaharnawawi.kl@utm.my

Fauziah bt Jusoh
M.Sc.(Industrial Design, Loughborough UK),
B.A(Industrial Design
fauziahj.kl@utm.my

Dr. Samsol Faizal bin Anis
Ph.D. Mech.Eng.(Univ.Kyushu, Jepun)
M.Mech.Eng. (UTM)
B.Mech.Eng. (Hons)(UTM)
samsol.kl@utm.my

Erni Syuhada bt Mazwil Ishan
M. Eng (Geotechnics) (UTM)
B.Eng. (Civil Eng.)(UTM),
Dip. Civil Engineering (UTM)
erni@utmspace.edu.my

Marina binti lias
M. Kejuruteraan (Universiti of Sheffield)
B. Kejuruteran Bahan/Material (University of Utah
Dip. Kejuruteraan Kimia (Indiana Inst. Of Tech. Port Wayne, USA)
marina.kl@utm.my

Marizan bt Yaacob
Sarjana (Ke. Elektronik)(UPM)
Sarjana Muda (Elektrik & Elektronik)Univ.of Plymouth)
marizan.kl@utm.my

Mat Zain bin Mat
M.E.E(UTM),
B.E.Eng.(Hons)(UTM)
matzain.kl@utm.my

Michelle Zainab Baird
M.Sc. (Construction Management)(UTM),
B.Eng. (Civil Engineering) (UTM)
michelle@utmspace.edu.my

Mohd Danial Anuar bin Sulaiman
M. Sc. (Construction Management) (UTM)
B.Eng. (Civil Eng.)(UTM),
Dip. Civil Engineering (UTM)
anuar@utmspace.edu.my

Noor Izaety Bt. Azhar
B.Eng Mechanical Engineering (Plant & Maintenance) (UTeM)
Dip. Mechanical Engineering (UTeM)
noor.izaety@utmspace.edu.my

Noraimi bin Shafie
M.E.E(UTM),
B.E.Eng.(Hons)(UKM)
noraimi.kl@utm.my

Norhaslinda bt Harun
M.E.E(electrical, electronic & communication)(UK)
Sarjana Muda (Kej. Komunikasi & Komputer)(UKM)
norhaslinda.kl@utm.my

Othman bin Jais
M. Eng. (Kej. Elektrik) (UTM),
B. Eng. (Kej.Elektrik Mikroelektronik) (UTM)
othmanjais.kl@utm.my

Raja Putri Melissa bt Raja Mustaffa
B. Eng. (Aeronautic) (UTM)
Dip. Mechanical Eng. (UTM)
melissa@utmspace.edu.my

Rosli bin Ibrahim
M.E.E(UTM),
B.Electronics Eng. (Hons)(Brighton Univ.)
irosli.kl@utm.my

Mohamad Zaid bin Johan
M.E.E(UTM),
B.E.Eng.(Hons)(UTM),
Diploma Kej. Elektrik (Kuasa)(UTM)
zaidjohan.kl@utm.my

Noor Diran bt Mohamed
M.E.E (UTM),
B.Eng. (Hons) Elec. & Electr. Eng) (UMIST, UK)
noordiran.kl@utm.my

Nor Syaziana bt Mohd Radzi
M.Eng. (Transportation)(UTM),
B.Eng.(Civil Eng.) (UTM)
Dip. (Civil Eng.)(Polytechnic)
norsyaziana@utmspace.edu.my

Norhashimah bt Omar
B.*Sc.(Chemical Eng.)(Texas)*
norhashimah.kl@utm.my

Nurul Alifah bt.Jatarona
M.Eng (Civil Eng.) (Construction Management)(UTM),
B.Sc. (Civil Engineering) (UTM)
alifah@utmspace.edu.my

Prof. Madya Zainudin bin Abd Razak
M.E.E(UTM), B.E.E (Power)(UTM)
zbar.kl@utm.my

Rosdina bt Rahiman
Sarjana (Elektronik) (UTM)
Sarjana Muda (Mikroelektrik) (UTM)
rosdina.kl@utm.my

Rosmawati bt Baba
M.E.E.(UTM),
B.Sc.(Elect. Eng) (California)
rosmawati.kl@utm.my

Saiful Bahari bin Safian
M.E.E.(UTM),
B.Sc (Elect.Eng.)(Texas)
saifulbsafian.kl@utm.my

Siti Sarah Sirah bt Suib
B.Sc. (Industrial Design) UTM
sarahsuib.kl@utm.my
(Study Leave)

Umi Salmah bt Mihad
M.E.E(UTM),
Advance Dip. (Electrical Eng.) (Communication)(ITM),
Dip.Electrical Engineering(Electronic)(ITM)
umisalmah.kl@utm.my

Wan Mohd Kamil bin Wan Ahmad
M. Eng (Geotechnics) (UTM)
B.Eng (Civil Engineering) (UiTM)
Dip. (Civil Engineering) (UiTM)
kamil.kl@utm.my

Zaimah bt Daud
M.E.E (UTM), B.Eng. (Electrical)(ITM)
Dip.Electrical Engineering (ITM)
zaimha.kl@utm.my

Zainab bt Rasol
M.Sc (Adv.Manufacturing)(Portsmouth, UK)
zainabrasol.kl@utm.my

DEPARTMENT OF MANAGEMENT

Mohamad Shafie bin Abdul Rashid
M.B.A (Marketing)(Eastern Michigan),
B. Business Management (UUM)
shafiear.kl@utm.my
Head of Department

Adibah binti Awang
MBA (UiTM),
B.Sc.(HRM) (Syracuse Univ.)
adibah.kl@utm.my

Che Noni bt Abdullah
M.Sc.(Property Management) (UTM),
B.Surv.(Property Management) (UTM)
chenoni.kl@utm.my

Diyana Nabilah binti Md Burhan
Bachelor of Management (Marketing) (UTM)
Dip. Technology Management (UTM)
diyana@utmspace.edu.my

Dr. Nor A'ini bt Rajab
Ph.D Civil Engineering (UTM)
M.Sc. (Project Management) (USM)
B.Surv.(Property Management)(UTM)
norainirajab.kl@utm.my

Dr. Sofian bin Ibrahim
Ph.D (Management) (UTM)
M.A (Technology Management) (UTM)
B.A (Social Science) (UM)
sofian.kl@utm.my

Hairuzzafwan bin Bukhari
MBA (UiTM),
B.Sc.(HRM) (Syracuse Univ.)
hairuzzafwan.kl@utm.my

Hasliza binti Husin @ Awi
Bachelor of Commerce (Accounting) University Of Adelaide, Australia
hasliza@utmspace.edu.my

Madihah binti Md Fadil
M.Sc. Human Resource Development (UiTM)
B.Sc. Human Resource Development (UiTM)
madihah@utmspace.edu.my

Nik Hamidi bin Nik Mustapha
Sarjana (Peg. Fasiliti) (UTM)
Sarjana Muda (Peg. Harta Tanah) (UTM)
nhamidi.kl@utm.my

Siti Zamilah binti Abd Hamid
B. Estate Management (UiTM)
Dip. Estate Management (UiTM)
zamilah@utmspace.edu.my

Mohd Salehudin bin Mohd Simpol
M. Accounting (UiTM),
B. Accounting (Hons)(UUM)
salehudin.kl@utm.my

Redzuan bin Abdul Rahman C.A.(M)
MBA (Finance)(UPM),
BACCT (Hons.) (UUM)
r*edzuanar.kl@utm.my*

DEPARTMENT OF COMPUTER SCIENCE AND SERVICES

Mohamad Ahmad Drs Nasrul
M.Sc. Information Technology (UKM),
B.Sc. Economy (UIA)
mahmad.kl@utm.my
Head of Department

Dr. Noraini bt Ismail
Ph.D (Mathematical Physics) (UTM)
M.A (Physics)(Western Michigan Univ.),
B.Sc.(Physics/Maths)(North West Missouri State Univ.)
norainiismail.kl@utm.my

Faizul Azli bin Abd. Ridzab @ Hassan
M.Sc. (Kej. Perisian Masa Nyata)(UTM),
B.Sc. (Sains & Pengurusan Sistem) (UKM)
faizul.kl@utm.my

Husna Hafiza binti R.Azami
B.Eng (Chemical Engineering) (University of Manchester)
husna.hafiza@utmspace.edu.my

Adzlin binti Nawawi
M.A English Language Studies (UKM)
B. Hsc. English Language & Literature (UIA)
adzlin@utmspace.edu.my

Dr. Norhayati bt Mohamed Nor
Ph.D Engineering Education (UTM)
M.Sc. Comp. Sc.(Bridgeport Univ. Connecticut),
B.Sc. Comp. Sc. (Northrop Univ. California)
nhayati.kl@utm.my

Foziahwati bt Abdul Razak
M.Sc(Education)(Northern Illinois),
B.Sc.(Mathematics)(Northern Illinois Univ.)
foziahwati.kl@utm.my

Mercy Trinovianti bt Mulyadi
M.Sc. Computer (UTM),
B.Sc. Computer (UTM),
Dip. Computer Science (UTM)
mercy.kl@utm.my

Mohd Daud bin Kasmuni
M.Sc.(Comp. Sc.)(Cranfield Inst. UK)
Bachelor of Comp. & Microprocessor Systems
(Univ. of Essex)
daud.kl@utm.my

Prof. Madya Mazlan bin Mohamad Abdul Hamed
M.Sc.(Applied Mathematics) (Western Carolina Univ.USA)
B.Sc.(Mathematics) Univ. of North Carolina, USA
mazlan.kl@utm.my

Rohani bt Abdul Rahman
M.Sc. (Mathematics)(UKM)
B.Sc. (Hons)(Mathematics)(Sheffield Univ)
rohaniar.kl@utm.my

Rozana binti Ismail
M. IT Management (UTM)
B. Information System (UiTM)
rozana@utmspace.edu.my

Syed Kamal Ariffin bin Syed Osman
Post graduate Dip.Ed.(Mathematics)UTM
B.A(Maths/Econs) (Concordia Univ. Montreal Canada)
syedkamal.kl@utm.my

Zur'aini bt Dahlan
M.Sc.(Mathematics)(Univ. Missouri, USA)
B.Sc (Mathematics)(Macalester College, USA)
zuraini.kl@utm.my

Nik Maria bt Nik Mahamood
Master of Science (Computer Science & Real Time
Software Engineering) (UTM),
Bachelor of Computer Science (Hons.) (USM)
maria.kl@utm.my

Rohani bt Hassan
M.Sc. Computer (UTM),
B.Sc. Computer (UPM),
Dip. Computer Science (UPM)
rohani.kl@utm.my

Rokiah bt Bahari
M.Sc. (Software Engineering) (UTM),
Dip. (Comp. Science) UTM
rokiah.kl@utm.my

Syed Ardi bin Syed Yahya Kamal
M.Sc. (Real Time Software Eng.) (UTM),
B.IT(Hons)(UUM)
syedardi.kl@utm.my

Yazid bin Jaafar
M.A (Political Science) UKM
B.A (Polictical Science (Sociology) USM
yazid.kl@utm.my

DEPARTMENT OF GEOMATIC AND BUILT ENVIRONMENT

Intan Afida bt Mohamad Amin
Master of Science (Planning- Housing) (UTM)
Bachelor of Urban and Regional Planning (UTM)
Diploma in Urban and Regional Planning (UTM)
afida@utmspace.edu.my
Head of Department

Husna Mohamad Afifi
B. Sc. (Hons) Architecture (The Robert Gordon Univ.)
husna.afifi@utmspace.edu.my

Mareeam Muneera bt Mohammed Kassim
B. (Urban & Regional Planning) (UTM)
Diploma (Urban & Regional Planning (UTM)
mareeam@utmspace.edu.my

Mohd Rosydi bin Abdullah
B. Eng. (Geomatic) (UTM)
Dip (Land Surveying) (UTM)
rosydi@utmspace.edu.my

Muhammad Naqib bin Abdul Halim
Master of Philosophy (Urban and Regional Planning) (UTM)
M. Phil (Urban and Regional Planning) (UTM)
naqib@utmspace.edu.my

Noorazliza binti Sudar
Master in Science (Geomatic Engineering) UTM
Bachelot of Science (Geomatic Engineering) UTM
Diploma in Land Surveying (Polytechnic)
noorazliza@utmspace.edu.my

Abdul Qayyum bin Nazri
M.Sc. (Facilities Management) (UTM)
B.Sc(Hons) Quantity Surveying (UTM)
qayyum@utmspace.edu.my

Kamarul Ariffin bin Abdul Kadir
M. Sc (Digital Architecture) (Middlesex Univ)
B. Sc. (Architecture) (UiTM)
kamarul.kl@utm.my

Mohamad Asri bin Ibrahim
B.Sc.Housing Building & Planning (Architecture) (USM)
asri@utmspace.edu.my

Mohd Zaki bin Bahrudin
Master of Philosophy (Urban and Regional Planning) (UTM)
M. Phil (Urban and Regional Planning) (UTM)
mohd.zaki@utmspace.edu.my

Nabila Hanim binti Mohd Anuar
Master of Philosophy (Urban and Regional Planning) (UTM)
M. Phil (Urban and Regional Planning) (UTM)
nabilah.hanim@utmspace.edu.my

Noralvina bt Nazri
M.Sc. (Integrated Construction Project Management) (UiTM)
B. (Hons) Quantity Surveying (UTM)
Diploma in Quantity Surveying (UTM)
noralvina@utmspace.edu.my

Nurul Azreen bt Azlan
M.Arch Urban Design (Univ. College London)
B.Sc. Architecture (UTM)
azreen.kl@utm.my
(Study Leave)

Raja Marzyani bt Raja Mazlan
Ph.D (Facilities Management) (UTM)
M.Sc) (Facilites Management and asset Maintenance (Heriot Watt Univ.)
B.Sc (Building Surveying) (UM)
b-marzyani@utm.my

Sr. Yusmady bin Md Junus
M. Sc. Construction Management (UTM),
B.(Hons) Quantity Surveying (UTM),
Diploma in Quantity Surveying (UTM)
yusmady.kl@utm.my

Sarah Erina Binti Roseley
M. in Education (Architecture studies) (On Going) Taylor's University
B.r of Science(Architectural Studies) Limkokwing University of Creative Technology
Dip. in Architecture Technology Limkokwing University of Creative Technology
sarah.erina@utmspace.edu.my

Wafa' Bt Hassan @ Kamaruddin
Master Science of Facilities Management , UITM
Bachelor of Architecture (LAM Part 2) , IIUM
Bachelor Science of Architecture (LAM Part 1) , IIUM
wafa@utmspace.edu.my

Rafiza bt Mohamed
M. Sc Construction Management (UTM),
B.Sc (Building) (UTM),
Dip. Quantity Surveying (UTM)
rafiza@utmspace.edu.my

Rosmiza bt Awang Noh
M.Sc.(Integrated Construction Project Management) (UiTM)
B.(Hons.) Quantity Surveying (UTM)
Diploma in Quantity Surveying (UTM)
rosmiza@utmspace.edu.my

Siti Fatimah Ilani binti Bilyamin
B. (Urban & Regional Planning) (UTM)
Dip. Urban & Regional Planning (UTM)
ilani@utmspace.edu.my

Siti Nurhuda bt Abd Wahid
M.Sc. in Construction Management (Univ. of Reading, UK)
B. (Hons) Quantity Surveying (UTM)
Diploma in Quantity Surveying (UTM)
nurhuda.kl@utm.my

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	Ministry of Higher Education
6. Code of Programme	T2410
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	Full Time : Minimum : (3 Years) Maximum : (4 ½ Years) Part Time : Minimum : (3 ½ 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	7	14	15
Short	0	3	0	9

12. Entry Requirement	i. General University Requirements Obtain Sijil Pelajaran Malaysia (SPM) or equivalent with at least Six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements a. Fulfill the General University Requirementsand passed with credits (Grade C) in • Mathematics • Additional Mathematics • Physics AND ONE (1) from the following subjects:

	• Chemistry • Lukisan Kejuruteraan • Teknologi Kejuruteraan or Pengajian Kejuruteraan Awam • Additional Science or Science or Biology. • Sejarah or Geografi • Information and Communication Technology or Reka Cipta b. Passed with at least credit Grade C in English at SPM/equivalent. c. Not physically disabled to conduct laboratory work.

13. Programme Educational Objectives Graduates of Diploma in CivilEngineering, will achieve the followings objectives:

1. Solve technical problems in civil engineering and to work in multidisciplinary teams in proposing alternative solutions.
2. Demonstrate semi-professional competencies in civil engineering via promotions and / or positions of increasing responsibility and / or successful achievements in business opportunities.
3. Involve in community / or professional organizations / or make contributions towards society.
4. Continue studies at higher level and self development as professional.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes(PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 **Ability to apply knowledge of mathematics, science, humanities, general knowledge and engineering**	Demonstrate and apply knowledge of mathematics, science, humanities, general knowledge and civil engineering principles in the development of an assistant civil engineer.[C4]	Lectures, tutorials, field and laboratory works, directed readings, internet searching, active, cooperative and problem-based learning, independent and group project.	Tests, Quizzes, Examinations, Assignments, Presentation.

PLO2 **Ability to apply skills in using science and civil engineering tools**	Exercise appropriate mathematical, computational and civil engineering tools and conduct field and laboratory experiments as well as analyze and interpret data.	Computer classes, studios, projects and field and laboratory works.	Field and laboratory reports, project report.

(b) Generic Skills			
Programme Learning Outcomes(PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 **Critical Thinking and Problem Solving**	Identify and analyse problems as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, case studies, problem based learning.	Examination, Tests, Project Report, Presentation.
PLO4 **Communication Skill**	Communicate clearly and effectively in oral and / or written forms. [P3, CS3]	Individual assignments and group projects.	Project or Assignment Reports,Peer Evaluations and Presentations.
PLO5 **Team Working**	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Individual assignments, group projects, cooperative learning and discussion.	Project or Assignment Reports, Peer Evaluations and Presentations.
PLO6 **Lifelong Learning**	Acquire and manage relevant information from various sources as well as accept new ideas. [A3, LL2]	Individual and group projects, directed reading, cooperative learning and discussion.	Project and Assignment Reports.
PLO7 **Entrepreneurship**	Recognize and identify business types and opportunities.[P3, KK1]	Group projects, directed reading, internet searching, lectures, active and cooperative learning.	Project or Assignment Reports.

PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Individual assignments, group projects and laboratory works.	Project or Assignment Reports.
PLO9 **Leadership**	Demonstrate leadership quality. [A3, LS2]	Group projects and laboratory works.	Project or Assignment Reports.
15. Total Credit Hours to Graduate		**91 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:
Final examinations (not more than 50%) and coursework. (Refer to UTM Academic Regulations)

Award requirements:
Students should achieve a total of 91 credit hours with minimum CPA of 2.00.

17. Career Prospect

Diploma Civil Engineering holder 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. 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
UHAS 1172	Malaysia Dynamic	2
ULAB 1032	Introductory Academic English	2
DDWS 1012	Engineering Mathematics I	2
DDWS 1713	Physics	3
DDWS 1413	Chemistry	3
DDWA 1002	Civil Engineering Drawing	2
DDWA 1132	Civil Engineering Materials	2
TOTAL		**16**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULAB 1042	Intermediate Academic English	2
UICD 1032	Science, Technology and Humankind	2
DDWS 1022	Eng. Mathematics II	2
DDWA 1023	Engineering Surveying	3
DDWA 1113	Engineering Mechanics	3
DDWA 1522	Environmental Engineering	2
DDWK 1632	Mechanical & Electrical Systems	2
TOTAL		**16**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULAB 2222	Communication Skills	2
DDWS 2033	Engineering Mathematics III	3
DDWA 2052	Civil Engineering Laboratory I	2
DDWA 2103	Mechanics of Materials & Structures	3
DDWA 2313	Fluid Mechanics	3
DDWA 2413	Soil Mechanics	3
TOTAL		**16**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
UKQx 2xx2	Co-Curriculum Service Learning	2
DDWA 2033	Project Management & Construction Practice	3
DDWA 2132	Civil Engineering Construction	2
DDWA 2153	Structural Steel Design	3
DDWA 2173	Theory of Structure	3
DDWA 2443	Highway and Traffic Engineering	3
TOTAL		**16**

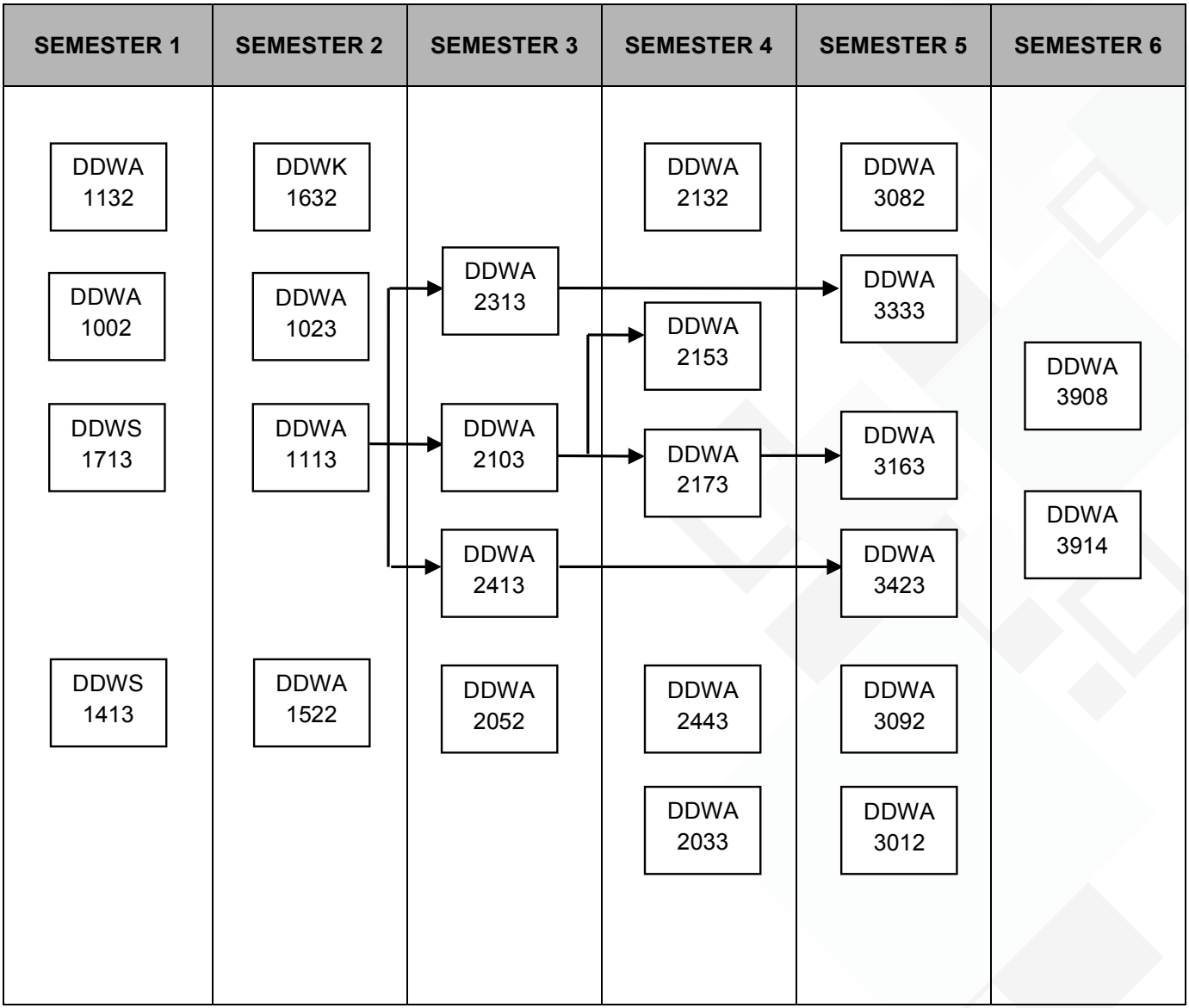
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWA 3012	Contract & Estimation	2
DDWA 3082	Final Year Project	2
DDWA 3092	Civil Engineering Laboratory II	2
DDWA 3163	Reinforced Concrete Design	3
DDWA 3333	Hydraulics & Hydrology	3
DDWA 3423	Geotechnical Engineering	3
TOTAL		**15**

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWA 3908	Industrial Training	8
DDWA 3914	Industrial Training Report	4
TOTAL		**12**
	TOTAL CREDITS :	**91**

PRE-REQUISITE
DIPLOMA IN CIVIL ENGINEERING



SYNOPSIS OF CORE COURSES

DIPLOMA IN CIVIL ENGINEERING

DDWA 1002: Civil 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.

DDWA 1132: Civil Engineering Materials

This course is to develop the students' knowledge of the behaviour, performance and limitations of construction materials, and to assist him/her evaluate alternative materials in terms of their basic properties, behaviour and economy. The module is designed to provide students with an appreciation of the properties and design implications of construction materials.

DDWA 1023: Engineering Surveying

This course introduces the basic knowledge of surveying and mapping, survey regulation, role of JUPEM and Licence Surveyors. Plans and maps: types, components, design and plotting method. Levelling: 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 field to finish in surveying and its application in civil engineering projects. Introduction and calculating various type of road curve: simple curve, transition curve and vertical curve. It also covers the various calculating areas: by 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.

DDWA 1522: 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 system and wastewater disposal. The fundamentals of solid waste management covering operational activities of collection and disposal will also be discussed.

DDWK 1632: 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.
The electrical system consists of the DC and AC circuit, electrical wiring drawing, electrical accessories and cable, wiring system.

DDWA 2103: Mechanics of Materials and Structures
(Pre-requisiteDDWA 1113)

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
(Pre-requisite DDWA 1113)

This course 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 pipeline.

DDWA 2413: Soil Mechanics
(Pre-requisite DDWA 1113)

This course 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 course 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 life long learning in the science and art of geotechnical engineering.

DDWA 2132: Civil Engineering Construction

This course is to highlights 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 in relation to different materials.

DDWA 2153: Structure Steel Design
(Pre-requisite DDWA 2103)

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

DDWA 2173: Structural Analysis
(Pre-requisite DDWA 2103)

This course presents different types of structures and degree of determinacy, calculating reactions and internal forces (axial, shear and bending)for indeterminate structures and its 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 2033: Project Management and Construction Practice

The course 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 basic introduction of 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 real project using techniques and tools in project management.

DDWA 2443: Highway and Traffic Engineering

This is a core course for the civil engineering course. The course 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 statistic and economy. Assignments and group projects related to various civil engineering fields are given to the students.

DDWA 2052: Civil Engineering Laboratory I

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

DDWA 3092: Civil Engineering Laboratory II

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

DDWA 3163: Reinforced Concrete Design
(Pre-requisite DDWA 2713)
This course presents the introduction to design of reinforced concrete structural elements such as beam, slab, column and footing.

DDWA 3423: Geotechnical Engineering
(Pre-requisite DDWA 2413)
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 occur at site will involve geotechnical and soil mechanics.

DDWA 3333: Hydraulics and Hydrology
(Pre-requisiteDDWA 2313)
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; dimensional analysis; and Hardy Cross method for pipe networks. It also consists of the basic concept of hydrology related to 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, stream flowmeasurement and hydrograph. Drainage design including Rational Method, Modified Rational Method and peak discharge forecasting (Gumbel's Extreme Value).

DDWA 3012: Contract and Estimation
This course consists of introduction to civil engineering construction industry, definition of contract and its importance, 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 3082 : Final Year Project
This course requires the understanding of civil engineering in their expert area relating to the core subjects previously taught. The students should implement their mini project and write a report at the end of the semester.

DDWA 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 the real working environment and practice their communication skills in order to solve real problems.

DDWA 3914: Industrial Training Report

The student will learn how to write proper industrial training report in accordance to 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			Ministry of Higher Education	
6. Code of Programme			T2425	
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 (4½ 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			i. General University Requirements a. Malaysian b. Obtain Sijil Pelajaran Malaysia (SPM) with at least Six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements a. Fulfill the General University Requirements and passed with credits (Grade C) in • Mathematics • Physics • Additional Mathematics AND ONE (1) of the following subjects : • Chemistry • Lukisan Kejuruteraan • Teknologi Kejuruteraan or Pengajian Kejuruteraan Elektrik & Elektronik • Additional Science or Science or Biology	

	• Pendawaian Domestik or Prinsip Elektrik dan Elektronik or Aplikasi Elektrik dan elektronik • Information and communication Technology or Reka Cipta • Pendidikan Islam • Geografi • Sejarah b. Pass with at *least credit* (Grade C) in English at SPM level / equivalent c. Not colour blind and physically disabled to conduct laboratory work.

13. Programme objectives:

Graduates of this program should be able to:

i. Apply knowledge and skills to solve technical problems in electronic engineering fields and able to work in multidisciplinary teams.

ii. Demonstrate semi professional competencies such as the skill of troubleshooting and equipment operational by applying knowledge in electronic and electrical engineering.

iii. Involve in community or professional organizations or make contributions towards society.

iv. Continuous studies at higher level and self development as professional.

14. Programme Learning Outcomes (PO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 **Ability to apply knowledge of science, humanities and engineering**	Incorporate knowledge of mathematics, science, humanities and electrical in the development as an assistant electronic engineer. [C3]	Lectures, tutorials, industrial training, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report
PLO2 **Ability to use tools, skills and technique**	Perform, test and troubleshoot electrical and electronics engineering laboratory works as well as analyze and interpret data to provide sustainable solutions. [P3]	Laboratory work, Industrial training, project and group projects.	Laboratory reports, Industrial training report, Project report.

(b) Generic Skills			
Programme Learning Outcomes (PO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 Critical Thinking and Problem Solving	Identify and analyse problems as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, case studies, problem based learning.	Test, Assignment report and Project report.
PLO4 Communication Skill	Communicate clearly and effectively in oral and/or written forms. [P3, CS3]	Assignments, Industrial training and projects	Assignment reports, Project report, Industrial training report and Presentations.
PLO5 Teamworking	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Assignments, Projects, Industrial training, cooperative learning and discussion.	Project/assignment reports , Industrial training report and Presentations.
PLO6 Lifelong Learning	Acquire and manage relevant information from various sources as well as new ideas. [A3, LL2]	Assignment, Projects, Industrial training directed reading, cooperative learning and discussion.	Project report, Assignment reports and Industrial training report
PLO7 Entrepreneurship	Recognize and identify business types and opportunities.[P3, KK1]	Assignment, Projects, directed reading, internet searching, lectures, active and cooperative learning.	Project report and Assignment reports.
PLO8 Ethics	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Lecture, Assignments, Projects, Industrial training and laboratory works.	Assignment, Project and Industrial training report
PLO9 Leadership	Demonstrate leadership quality. [A3, LS2]	Lecture, Assignments, Projects, Industrial training and laboratory works.	Assignment, Project and Industrial training report
15. Total credit hours to graduate		**91 credit hours**	
16. Programme structures and features, curriculum and award requirements			

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: (Refer to UTM's regulations)

- **Courses**:
  50 % Course work
  50 % Final Examination
- **Laboratory work:**
  100% Course work
- **Skill acquisition (Lab incorporated):**
  50%- 60% Course work
  40%- 50% Final Examination

Award requirements:
Students should:

- Achieve a total of 91 credit hours with minimum CPA of 2.00

17. Our uniqueness

Diploma in Electronic Engineering the student will go through five month 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

Student are given an opportunity to enroll in short courses offered by university during studies or semester breaks.

20. Facilities Available

a. Electronics Workshop with PCB design
b. Electrical Workshop
c. Electronics Analogue Laboratory I
d. Electronics Analogue Laboratory I
e. Communication Laboratory
f. Instrumentation Laboratory
g. Instrumentation and measurement Laboratory
h. Programmable Logic Controller (PLC) Laboratory
i. Digital Electronics Laboratory I
j. Digital Electronics Laboratory II
k. Electrical Technology Laboratory
l. Systems Laboratory.
m. Microprocessor Laboratory
n. Industrial automation and Robotics Laboratory
o. 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
DDWE 1152	Introduction to Electrical Engineering	2
UICD 1032	Science, Technology and Mankind	2
ULAB 1032	Introductory Academic English	2
DDWS 1012	Engineering Mathematics 1	2
DDWE 1103	Circuit Theory 1	3
DDWE 1123	Digital Electronics	3
DDWE 1702	Electrical and Electronics Workshop	2
	Total	**16**

YEAR 1 (SEMESTER 2)

CODE	COURSE	CREDIT
UHAS 1172	Malaysia Dynamic	2
ULAB 1042	Intermediate Academic English	2
DDWS 1022	Engineering Mathematics 2	2
DDWS 1713	Physics	3
DDWE 1113	Circuit theory 2	3
DDWE 1133	Instrumentation and measurement	3
DDWE 1711	Electrical Engineering Laboratory 1	1
	Total	**16**

YEAR 2 (SEMESTER 3)

CODE	COURSE	CREDIT
UKQ* 2**2	Co-curriculum Service Learning	2
DDWS 2033	Engineering Mathematics 3	3
DDWE 2813	Programmable Logic Controller	3
DDWE 2153	Electronics 1	3
DDWE 2112	Engineering Management	2
DDWK 2113	Electrical Technology	3
	Total	**16**

YEAR 2 (SEMESTER 4)

CODE	COURSE	CREDIT
ULAB 2222	Communication Skills	2
DDWE 2163	Electronics 2	3
DDWE 2143	Industrial Automation	3
DDWE 2701	Electrical Engineering Laboratory 2	1
DDW* 2**3	Elective (A1 or B1)	3
DDWE 2103	Network and System	3
	Total	**15**

YEAR 3 (SEMESTER 5)

CODE	COURSE	CREDIT
DDWE 3703	Project	3
DDWE 2803	Microprocessor	3
DDWC 3103	Programming	3
DDW* 3**3	Elective (A2 or B2)	3
DDW* 3**3	Elective (A3 or B3)	3
DDWE 3711	Electronic Engineering laboratory	1
	Total	**16**

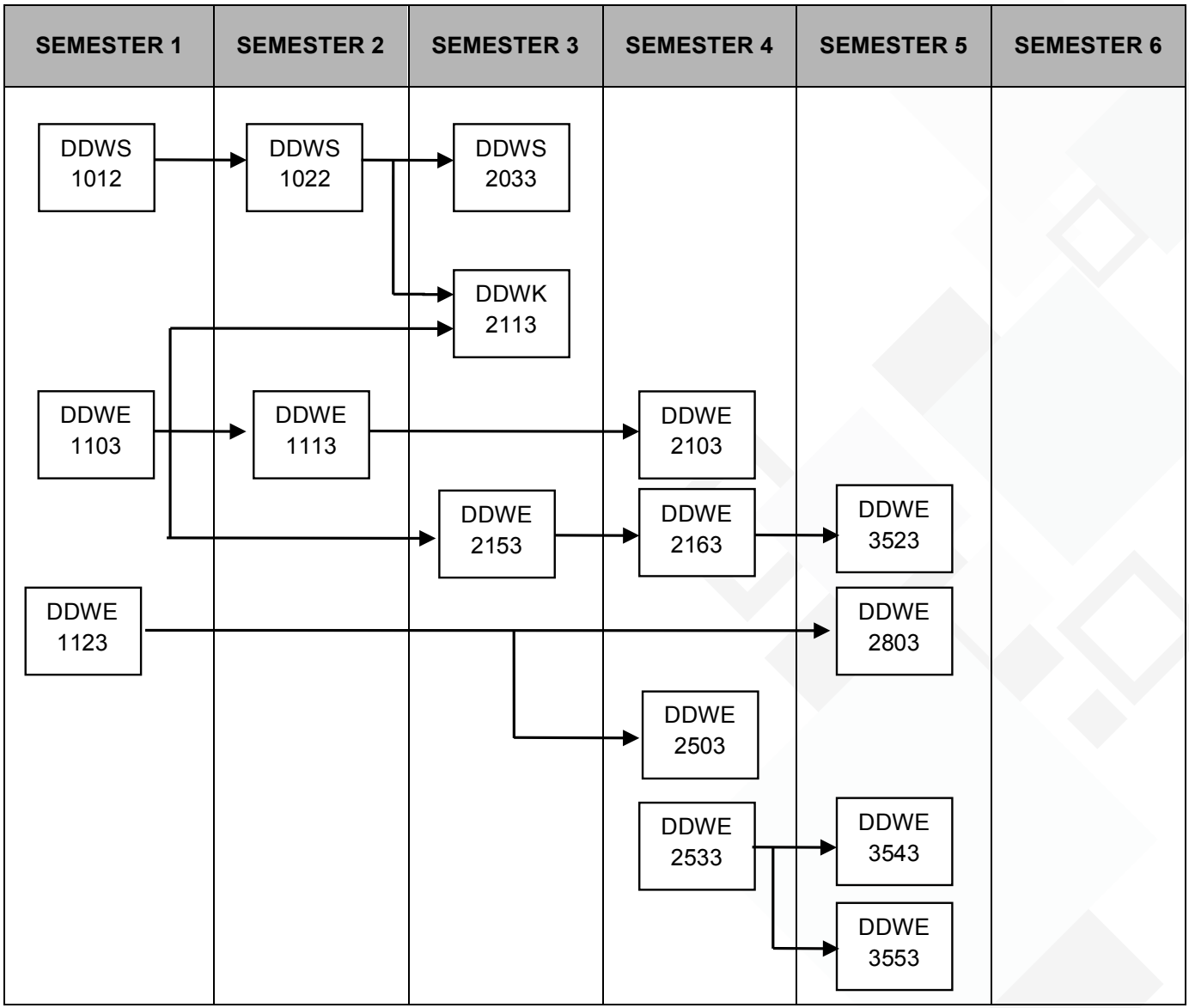
YEAR 3 (SEMESTER 6)

CODE	COURSE	CREDIT
DDWE 3908	Industrial Training	8
DDWE 3914	Industrial Training Report	4
	Total	**12**
	TOTAL	**91**

*Elective A (Electronics)			
No	**Code**	**Course**	**Credit**
A1	DDWE 2503	Digital Interfacing.	3
A2	DDWE 3513	Electronic Manufacturing Process	3
A3	DDWE 3523	Industrial Electronics	3
		Total	**9**
***Elective B (Electronics Communication)**			
No	**Code**	**Course**	**Credit**
B1	DDWE 2533	Communication Engineering	3
B2	DDWE 3543	Telecommunication and Switching	3
B3	DDWE 3553	Data Communication and Protocol	3
		Total	**9**

* Choose either Elective A (A1,A2,A3) or Elective B (B1, B2, B3)

PRE-REQUISITE
DIPLOMA IN ELECTRONICS ENGINEERING



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

PROGRAMME SPECIFICATIONS

1. Programme Name			Diploma in Electrical Engineering (Power)	
2. Final Award			Diploma in Electrical Engineering (Power)	
3. Awarding Institution			UTM	
4. Teaching Institution			UTM	
5. Professional or Statutory Body of Accreditation			Ministry of Higher Education	
6. Code of Programme			T2421	
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 (4½ 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			i. General University Requirements a. Malaysian b. Obtain Sijil Pelajaran Malaysia (SPM) with at least Six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements c. Fulfill the General University Requirements and passed with credits (Grade C) in • Mathematics • Physics • Additional Mathematics AND ONE (1) of the following subjects : • Chemistry • Lukisan Kejuruteraan • Teknologi Kejuruteraan or Pengajian Kejuruteraan Elektrik & Elektronik • Additional Science or Science or Biology	

	• Pendawaian Domestik or Prinsip Elektrik dan Elektronik or Aplikasi Elektrik dan elektronik • Information and communication Technology or Reka Cipta • Pendidikan Islam • Geografi • Sejarah d. Pass with at *least credit* (Grade C) in English at SPM level / equivalent e. Not colour blind and physically disabled to conduct laboratory work.

13. Programme objectives:

Graduates of this program should be able to:

d. Apply knowledge and skills to solve technical problems in electrical engineering fields and able to work in multidisciplinary teams.

e. Demonstrate semi professional competencies such as the skill of troubleshooting and equipment operational by applying knowledge in electronic and electrical engineering.

f. Involve in community or professional organizations or make contributions towards society.

g. Continuous studies at higher level and self development as professional.

14. Programme Learning Outcomes (PO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 **Ability to apply knowledge of science, humanities and engineering**	Incorporate knowledge of mathematics, science, humanities and electrical in the development as an assistant electrical engineer. [C3]	Lectures, tutorials, industrial training, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report
PLO2 **Ability to use tools, skills and technique**	Perform, test and troubleshoot electrical engineering laboratory works as well as analyze and interpret data to provide sustainable solutions. [P3]	Laboratory work, Industrial training, project and group projects.	Laboratory reports, Industrial training report, Project report.

(b) Generic Skills			
Programme Learning Outcomes (PO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 Critical Thinking and Problem Solving	Identify and analyse problems as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, case studies, problem based learning.	Test, Assignment report and Project report.
PLO4 Communication Skill	Communicate clearly and effectively in oral and/or written forms. [P3, CS3]	Assignments, Industrial training and projects	Assignment reports, Project report, Industrial training report and Presentations.
PLO5 Teamworking	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Assignments, Projects, Industrial training, cooperative learning and discussion.	Project/assignment reports , Industrial training report and Presentations.
PLO6 Lifelong Learning	Acquire and manage relevant information from various sources as well as new ideas. [A3, LL2]	Assignment, Projects, Industrial training directed reading, cooperative learning and discussion.	Project report, Assignment reports and Industrial training report
PLO7 Entrepreneurship	Recognize and identify business types and opportunities.[P3, KK1]	Assignment, Projects, directed reading, internet searching, lectures, active and cooperative learning.	Project report and Assignment reports.
PLO8 Ethics	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Lecture, Assignments, Projects, Industrial training and laboratory works.	Assignment, Project and Industrial training report
PLO9 Leadership	Demonstrate leadership quality. [A3, LS2]	Lecture, Assignments, Projects, Industrial training and laboratory works.	Assignment, Project and Industrial training report
15. Total credit hours to graduate		**91 credit hours**	

16. Programme structures and features, curriculum and award requirements

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: (Refer to UTM's regulations)

- Courses:
  50 % Course work
  50 % Final Examination

- Laboratory work:
  100% Course work

- Skill acquisition (Lab incorporated):
  50%- 60% Course work
  40%- 50% Final Examination

Award requirements:
Students should:

- Achieve a total of 91 credit hours with minimum CPA of 2.00

17. Our uniqueness

Diploma in Electrical Engineering (Power) the student will go through five month of Industrial Training with established electrical power engineering firm or government sector in order 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 (Power) 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

Student are given an opportunity to enroll in short courses offered by university during studies or semester breaks.

20. Facilities Available

a. Electronics Workshop with PCB design
b. Electrical Workshop
c. Electronics Analogue Laboratory I
d. Electronics Analogue Laboratory I

e. Communication Laboratory
f. Instrumentation Laboratory
g. Instrumentation and measurement Laboratory
h. Programmable Logic Controller (PLC) Laboratory
i. Digital Electronics Laboratory I
j. Digital Electronics Laboratory II
k. Electrical Technology Laboratory
l. Systems Laboratory.
m. Microprocessor Laboratory
n. Industrial automation and Robotics Laboratory
o. Electrical machine Laboratory
p. Power System Laboratory 1
q. 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
- MARA

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

CODE	COURSE	CREDIT
DDWE 1152	Introduction to Electrical Engineering	2
UHAS 1172	Malaysia Dynamic	2
ULAB 1032	Introductory Academic English	2
DDWS 1012	Engineering Mathematics 1	2
DDWE 1103	Circuit Theory 1	3
DDWE 1123	Digital Electronics	3
DDWE 1702	Electrical and Electronics Workshop	2
	Total	16

YEAR 1 (SEMESTER 2)

CODE	COURSE	CREDIT
UICD 1032	Science, Technology and Human	2
ULAB 1042	Intermediate Academic English	2
DDWS 1022	Engineering Mathematics 2	2
DDWS 1713	Physics	3
DDWE 1113	Circuit Theory 2	3
DDWE 1133	Instrumentation and Measurement	3
DDWE 1711	Electrical Engineering Laboratory 1	1
	Total	**16**

YEAR 2 (SEMESTER 3)

CODE	COURSE	CREDIT
ULAB 2222	Communication Skills	2
DDWS 2033	Engineering Mathematics 3	3
DDWE 2813	Programmable Logic Controller	3
DDWE 2153	Electronics 1	3
DDWE 2112	Engineering Management	2
DDWK 2113	Electrical Technology	3
	Total	**16**

YEAR 2 (SEMESTER 4)

CODE	COURSE	CREDIT
UKQ* 2**2	Co-curriculum Service Learning	2
DDWE 2163	Electronics 2	3
DDWE 2143	Industrial Automation	3
DDWK 2103	Electrical Installation Work	3
DDWE 2701	Electrical Engineering Laboratory 2	1
DDWE 2103	Network and System	3
	Total	**15**

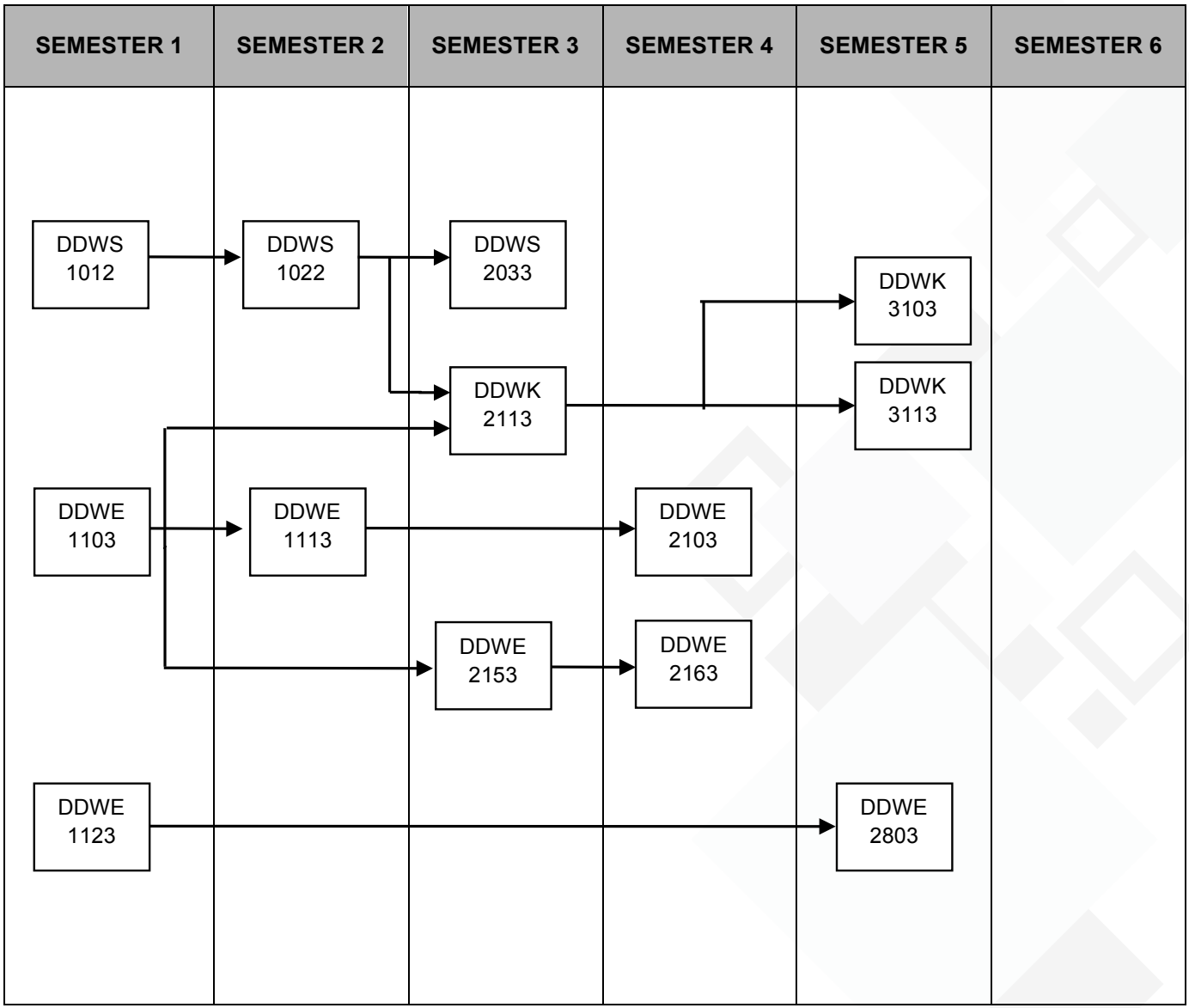
YEAR 3 (SEMESTER 5)

CODE	COURSE	CREDIT
DDWK 3703	Project	3
DDWE 3803	Microprocessor	3
DDWC 3103	Programming	3
DDWK 3103	Electrical Machine	3
DDWK 3113	Electrical Power System	3
DDWK 3711	Power Engineering Laboratory	1
	Total	**16**

YEAR 3 (SEMESTER 6)

CODE	COURSE	CREDIT
DDWK 3908	Industrial Training	8
DDWK 3914	Industrial Training Report	4
	Total	**12**
	TOTAL	**91**

PRE-REQUISITE
DIPLOMA IN ELECTRICAL ENGINEERING (POWER)



*** Pre-requisite at least D**

PROGRAMME SPECIFICATIONS

1. Programme Name			Diploma in Electrical Engineering (Mechatronic)	
2. Final Award			Diploma in Electrical Engineering (Mechatronic)	
3. Awarding Institution			UTM	
4. Teaching Institution			UTM	
5. Professional or Statutory Body of Accreditation			Ministry of Higher Education	
6. Code of Programme			T2423	
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			Minimum : 6 semester (3 years) Maximum : 9 semester (4½ years)	
Types of Semester	No. of Semesters		No. of weeks per semester	
	Full time	Part time	Full time	Part time
Long	6	7	14	15
Short	0	3	0	9
12. Entry Requirement			iii. General University Requirements a. Malaysian b. Obtain Sijil Pelajaran Malaysia (SPM) with at least Six (6) credits (Grade C) inclusive of Bahasa Melayu. iv. Special Programme Requirements c. Fulfill the General University Requirements and passed with credits (Grade C) in • Mathematics • Physics • Additional Mathematics AND ONE (1) of the following subjects : • Chemistry • Lukisan Kejuruteraan • Teknologi Kejuruteraan or Pengajian Kejuruteraan Elektrik & Elektronik • Additional Science or Science or Biology • Pendawaian Domestik or Prinsip Elektrik dan Elektronik or Aplikasi Elektrik dan elektronik • Information and communication Technology	

	or Reka Cipta • Pendidikan Islam • Geografi • Sejarah f. Pass with at *least credit* (Grade C) in English at SPM level / equivalent g. Not colour blind and physically disabled to conduct laboratory work.

13. Programme Educational Objectives (PEO)

Graduates of this program should be able to:

d. Apply knowledge and skills to solve technical problems in electronic engineering fields especially in mechatronics and able to work in multidisciplinary teams.

e. Demonstrate semi professional competencies such as the skill of troubleshooting and equipment operational by applying knowledge in electronic and electrical engineering.

f. Involve in community or professional organizations or make contributions towards society.

g. Continuous studies at higher level and self development as professional.

14. Programme Learning Outcomes (PLO)

Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
(a) Technical Knowledge and Competencies			
PLO1 **Ability to apply knowledge of science, humanities and engineering**	Incorporate knowledge of mathematics, science, humanities and electrical in the development as an assistant mechatronics engineer. [C3]	Lectures, tutorials, industrial training, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Presentation and Industrial training report
PLO2 **Ability to use tools, skills**	Perform, test and troubleshoot electrical and	Laboratory work, Industrial training, project and group	Laboratory reports, Industrial training report, Project report.

and technique	mechatronics engineering laboratory works as well as analyze and interpret data to provide sustainable solutions. [P3]	projects.	
(b) Generic Skills			
PLO3 Critical Thinking and Problem Solving	Identify and analyse problems as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, case studies, problem based learning.	Test, Assignment report and Project report.
PLO4 Communication Skill	Communicate clearly and effectively in oral and/or written forms. [P3, CS3]	Assignments, Industrial training and projects	Assignment reports, Project report, Industrial training report and Presentations.
PLO5 Team working	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Assignments, Projects, Industrial training, cooperative learning and discussion.	Project/assignment reports, Industrial training report and Presentations.
PLO6 Lifelong Learning	Acquire and manage relevant information from various sources as well as new ideas. [A3, LL2]	Assignment, Projects, Industrial training directed reading, cooperative learning and discussion.	Project report, Assignment reports and Industrial training report
PO7 Entrepreneurship	Recognize and identify business types and opportunities. [P3, KK1]	Assignment, Projects, directed reading, internet searching, lectures, active and cooperative learning.	Project report and Assignment reports.
PO8 Ethics	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Lecture, Assignments, Projects, Industrial training and laboratory works.	Assignment, Project and Industrial training report
PO9 Leadership	Demonstrate leadership quality. [A3, LS2]	Lecture, Assignments, Projects, Industrial training and laboratory works.	Assignment, Project and Industrial training report
15. Total credit hours to graduate		**91 credit hours**	
16. Programme structures and features, curriculum and award requirements			
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:

- Courses:
  50 % Course work
  50 % Final Examination
- Laboratory work:
  100% Course work
- Skill acquisition (Lab incorporated):
  50%- 60% Course work
  40%- 50% Final Examination

Award requirements:
Students should:

- Achieve a total of 91 credit hours with minimum CPA of 2.00

17. Our uniqueness

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

18. Career Prospects

Diploma in Electrical Engineering (Mechatronic) 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 an opportunity to enroll in short courses offered by university during studies or semester breaks.

20. Facilities Available

a. Electronics Workshop with PCB design
b. Electrical Workshop
c. Electronics Analogue Laboratory I
d. Electronics Analogue Laboratory I
e. Communication Laboratory
f. Instrumentation Laboratory
g. Instrumentation and measurement Laboratory
h. Programmable Logic Controller (PLC) Laboratory
i. Digital Electronics Laboratory I
j. Digital Electronics Laboratory II
k. Electrical Technology Laboratory
l. Systems Laboratory.
m. Microprocessor Laboratory
n. Industrial automation and Robotics Laboratory

o. Electrical machine Laboratory
p. Power System Laboratory 1
q. 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
- MARA

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

CODE	COURSE	CREDIT
DDWE 1152	Introduction to electrical engineering	2
UHAS 1172	Malaysia Dynamic	2
ULAB 1032	Introductory Academic English	2
DDWS 1012	Engineering Mathematics 1	2
DDWE 1103	Circuit theory 1	3
DDWE 1123	Digital electronics	3
DDWE 1702	Electrical and electronics workshop	2
	Total	16

YEAR 1 (SEMESTER 2)

CODE	COURSE	CREDIT
UICD 1032	Science, Technology and Mankind	2
ULAB 1042	Intermediate Academic English	2
DDWS 1022	Engineering Mathematics 2	2
DDWS 1713	Physics	3
DDWE 1113	Circuit theory 2	3
DDWE 1133	Instrumentation and measurement	3
DDWE 1711	Electrical Engineering Laboratory 1	1
	Total	16

YEAR 2 (SEMESTER 3)

CODE	COURSE	CREDIT
ULAB 2222	Communication skills	2
DDWS 2033	Engineering Mathematics 3	3
DDWE 2813	Programmable logic controller	3
DDWE 2153	Electronics 1	3
DDWE 2112	Engineering management	2
DDWK 2113	Electrical technology	3
	Total	16

YEAR 2 (SEMESTER 4)

CODE	COURSE	CREDIT
UKQ* 2**2	Co-curriculum Service Learning	2
DDWE 2163	Electronics 2	3
DDWE 2143	Industrial automation	3
DDWE 2103	Network and system	3
DDWJ 2112	Structure and Machines	2
DDWJ 2901	Mechanical workshop	1
DDWE 2701	Electrical Engineering Laboratory 2	1
	Total	15

YEAR 3 (SEMESTER 5)

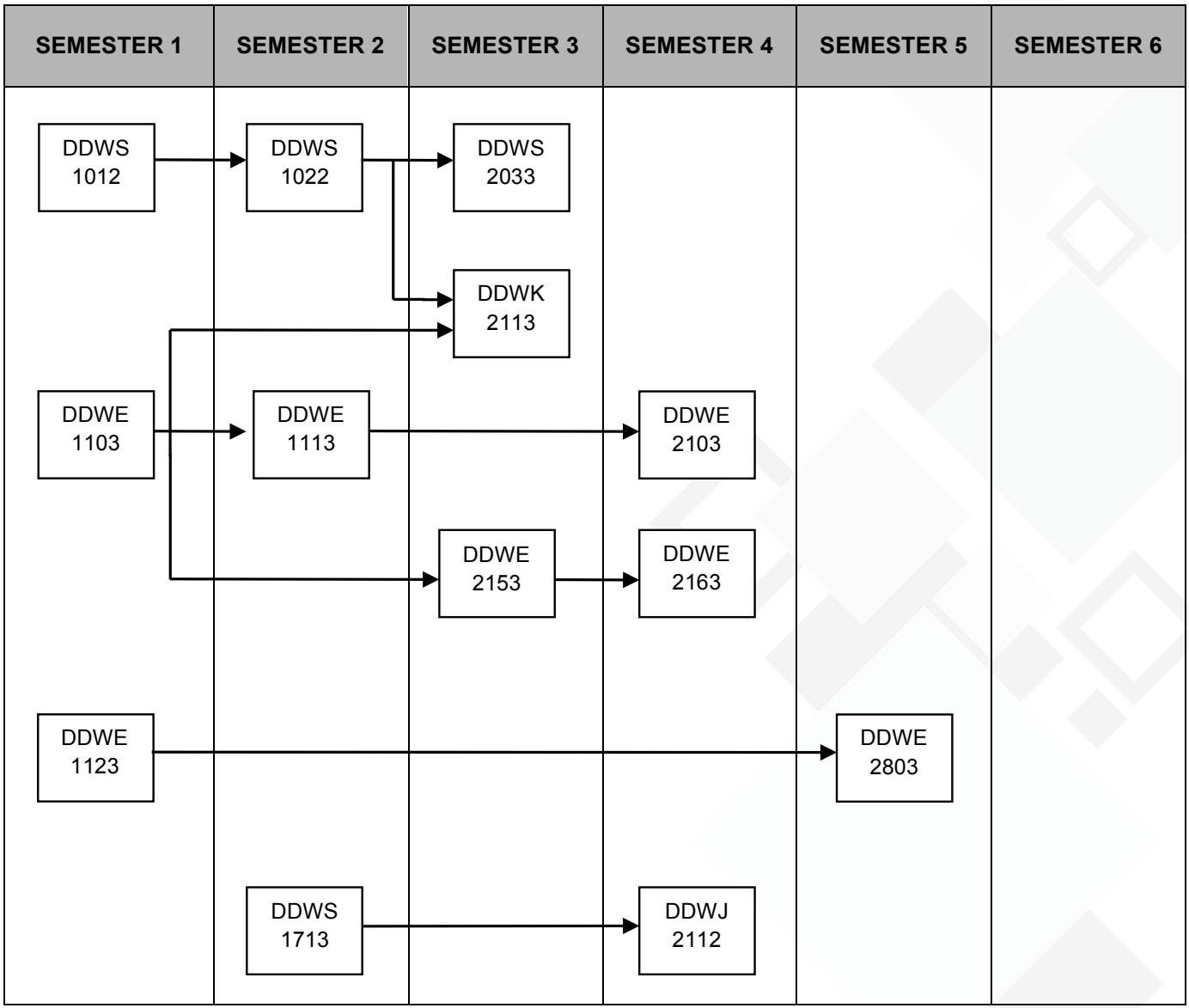
CODE	COURSE	CREDIT
DDWB 3703	Project	3
DDWE 3803	Microprocessor	3
DDWC 3103	Programming	3
DDWK 3132	Electrical Machine and Drives	2
DDWJ 3502	Computer Aided Drawing	2
DDWJ 3322	Fluid Power	2
DDWB 3711	Mechatronic engineering laboratory	1
	Total	16

YEAR 3 (SEMESTER 6)

CODE	COURSE	CREDIT
DDWB 3908	Industrial training	8
DDWB 3914	Industrial training report	4
	Total	12

PRE-REQUISITE

DIPLOMA IN ELECTRICAL ENGINEERING (MECHATRONIC)



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

SYNOPSIS OF CORE COURSES

DIPLOMA IN ELECTRONIC ENGINEERING
DIPLOMA IN ELECTRICAL ENGINEERING (MECHATRONIC)
DIPLOMA IN ELECTRICAL ENGINEERING (POWER)

DDWC 3012 : Programming

The course is designed to expose the engineering students to the basic of computer including hardware and software; practice software development method 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 flowchart 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, student should be able to demonstrate and apply the knowledge to solve problems and construct C programming.

DDWE 1103 : Circuit Theory 1

This course is designed to introduce students with 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 includes Ohm's Law, Kirchhoff Voltage and Current law, Thevenin's and Norton's theorems, mesh and nodal analysis. The students are expected to be able to solve variables in any given DC electric circuits using the above mention methods and using computer simulation approach.

DDWE 1702 : Electrical and Electronic Workshop

This course is compulsory to the first year students, which is a combination of two (2) laboratories. The lab involve are electrical workshop and electronic workshop. Students must undergo each of the 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 some of the metrological terminologies used in experimental methods, concept of metrology and its application. The course will also provide understanding the concept electrical measurement quantity using analogue and digital instruments. The interfaces of the instruments and also the quality of the signals acquired are introduced. Besides that, this course also introduces the type of electrical noise and the ways to reduce noise and interference. Finally, the fundamental principle of transducers, transducer operations, characteristic and functions will be discussed.

DDWE 1123 : Digital Electronics

Electronic Digital consist of topics covered the introductory of digital concept, numbers system, operations and codes, logic gates, Boolean algebra and combinational logic circuit, logic simplification and designing combinational logic circuit, combinational circuits building blocks, programmable logic devices, integrated circuit technologies and simulation using Electronic Workbench

DDWE 1152 : Introduction of Electrical Engineering

This course serves as 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 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 and mankind well being.

DDWE 1113 : Circuit Theory 2

(Pre-requisite DDWE 1103)

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, Thevenin's and Norton's theorems. Based on these the students are expected to be able to solve for variables in any given AC electrical circuits. The course also provides the students with the basic understanding of operational amplifiers (op amp) and how nodal analysis can be applied to various type of op amp circuits. With the knowledge learned, the student would be able to apply the basic laws, theorems and methods for solving completely with confidence various problem in circuit analysis. The students are expected to be able to analysis any DC electric circuits using computer simulation approach.

DDWE 1711 : Electrical Engineering Laboratory 1

This course involves four laboratories to run experiments related to specialized subjects in first and second semester. The subjects are Electric circuit, Instrumentation and measurement, Electronic digital and Electronic 1. The course is designed to give them better theoretical understanding as well as providing them hands-on skill. The laboratory involves are:-

Circuit Theory 1 laboratory provides three experiments such as series circuit, Parallel and series parallel and capacitor.

Instrumentation and measurement laboratory provides three experiments such as using analogue meter and error calculating, multimeter and voltage control oscillator and oscilloscope and function generator experimental.

Digital Electronics laboratory provides three experiments such as basic gate, gate combination and flip-flop, 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 1253 : Electronics 1

(Pre-requisite DDWE 1103)

This course consists of introduction to semiconductor devices such as diodes and transistors. Introduction to semiconductor diodes, semiconductor materials, formation of 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 2103 : Network and System

(Pre-requisite Circuit Theory 2 (DDWE 1113) & Engineering Mathematics 3 (DDWS 2033))

Students are exposed to the steady-state electrical circuit for DC analysis. Afterwards, the relevant concepts in transient circuit analysis for first and second order circuit are taught to the student. The course is also equipped the students with necessary knowledge related to the AC power calculation, three phase circuits 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.

DDWE 2701 : Electrical Engineering Laboratory 2

This course involves four laboratories to run experiments related to specialized subjects in second and third semester. The subjects are Instrumentation, Electrical technology and Circuit Theory. The course is designed to give them better theoretical understanding as well as providing them hands-on skill. The laboratory involves are:-

Electrical technology laboratory provides three experiments such as single phase transformer testing, determine and power factor correction and single phase generator (separated exciter) experimental.

Circuit Theory 2laboratory 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 such as 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 conclusion and able to write a short report on the experiments done in the laboratory.

DDWE 1263 : Electronics 2

(Pre-requisite DDWE 2153)

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 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 **PSPICE** or **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 2143 : Industrial Automation

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

DDWE 3513 : Electronic Manufacturing Process

This subject consists of introduction to electronic industry, history of electronic manufacturing and global market for electronic product. Introduction to principles of production, product life cycle, product and process relationship, productivity, production and inventory control. Introduction to basic electronic components, types of component, packaging and categories. Introduction and definitions of electro static 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, 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 testability of product, testing objective, testing techniques and procedures, types of product testing. Case study and mini project.

DDWE 2803 : Microprocessor
(Pre-requisite DDWE 1123)

This course introduces students to the microprocessor and microcontroller system. Various essential topics of the 8051-based microprocessors and microcontrollers including the architecture, programming, interface, and relevant software and hardware products. The course consists of 2 major parts; hardware and software. Hardware topics include microprocessor and its concept, basic configurations of microprocessor-based system, supporting components, assembling a basic system, and interfacing with input/output devices. Software topics cover assembly language programming structure, addressing modes, the operations of assembly language instruction, stacks, subroutines and index; and microprocessor specific features, the interrupts, and timers.

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 science to expose student the 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 3703 : Project

The students should implement their project and write a report at the end of the semester.

DDWE 3711 : Electronic Engineering Laboratory

This course involves four laboratories to run experiments related to specialized subjects for second and third year students of DDWE programme which cover all the course of Electronics 2, Industrial automation and robotic. For student registered Elective A1 and A2 (Industrial electronics and Digital Interfacing) and Elective B1 and B2 (Communication engineering and

Telecommunication and switching) . The course is designed to give them better theoretical understanding as well as providing them hands-on skill. The laboratory involves are:-

Electronics 2 laboratory provides three experiments such as field effect transistor (FET), Op-Amp and power amplifier experimental.

Industrial automation and robotic laboratory provide four experiments such as Feeding and extracting modules, Conveyor system (with sensor) modules, Operation of an industrial robot and Handling system with roller conveyor modules experimental.

For student registered Elective A1 and A2 only;

Digital Interfacing laboratory provides three experiments such as flip-flop, counter and summing circuit.

Industrial electronics laboratory provides three experiments such as Voltage regulator, Oscillator and astable multivibrator and the SCR phase control circuits experimental.

For student registered Elective B1 and B2 only;

Communication engineering laboratory provides three experiments such as Amplitude mode, Frequency mode and Tuned circuit experimental.

Telecommunication and switching laboratory provides two experiments such as telephone model and switching circuit 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 3513 : Industrial Electronics
(Pre-requisite DDWE 2163)

The course is designed to introduce the importance of power supplies, waveform generators, thyristor devices and switching devices and circuits.

DDWE 2503 : Digital Interfacing
(Pre-requisite DDWE 1123)

The course outline has been divided into two blocks of study where the basis is mutual related in theoretical and application. These are machine memory concept and interfacing system. The syllabus comprises of introduction to computer concepts that covers basic components or sub-system 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 the 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 system that practice in the current market. These involve the user interface, software interface and hardware interface. A 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 the overview of digital signal processing with the aim of presenting the students to the various digital signals and image processing and application with respect to the market and demand trend.

DDWB 3703 : Project

The students should implement their project and write a report at the end of the semester.

DDWE 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 the real working environment and practising their communication skills in order 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.

DDWB 3711 : Mechatronic Engineering Laboratory

This course involves five laboratories to run experiments related to specialized course in second and third year student. The courses are Electronics 2, Control system, Structure and machine, Electrical machine and drive Fluid power and Industrial automation and robotic. The course is designed to give them better theoretical understanding as well as providing them hands-on skill. The laboratory involves are:-

Electronics 2 laboratory provides three experiments such as field effect transistor (FET), Op-Amp and power amplifier experimental.

Industrial automation laboratory provide four experiments such as feeding and extracting modules, conveyor system (with sensor) modules, operation of an industrial robot and handling system with roller conveyor modules experimental.

Electrical machine and drive provide two experiments such as controlled and uncontrolled rectifier circuit and AC voltage controller experimental.

Structure and machine laboratory provides two experiments such as structure analysis and machine experimental.

Fluid power laboratory provides two experiments such as hydraulic and pneumatic 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.

DDWB 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 the real working environment and practising their communication skills in order to solve real problems.

DDWB 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.

DDWK 2113 : Electrical Technology
(Pre-requisite DDWE 1103 & DDWS 1022)

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 system. Other topics covered are single phase transformer and direct current machines that emphasized on their constructional features, operating principles and performance analysis.

DDWK 2103 : Electrical Installation Work

This course introduces students to the Wiring regulation IEE 16th Edition and safety practice in work place. Symbols and electrical drawing. Accessories, wiring circuit, cable and conductor. Wiring design for domestic. Earthing system. Lightning protection system. Electrical wiring testing. Tariff and power factor correction.

DDWK 3103 : Electrical Machine
(Pre-requisite DDWK 2113)

This subject consists of three phase transformer, construction and basic operation, connection, phase shift, classification, performance and parallel operation. Three phase synchronous machines, construction and principle operation, three-phase winding, equivalent circuit, voltage regulation, parallel operation, synchronization method, effect of field and load variation, active power. Three phase induction machine, construction and principle operation, torque and speed characteristic, slip, equivalent circuit and performance evaluation and active power flow chart. Single phase motor, construction structure, starting and operation and characteristic of single phase induction motor, universal motor, stepper motor, hysterisis motor, and synchronous reluctance motor. Motor control in industry, motor control devices, starters and electrical trigger.

DDWK 3113 : Electrical Power System
(Pre-requisite DDWK 2113)

This subject consists of introduction power system, methods of electrical power generation, transmission system, power system diagrams, per unit quantity, symmetrical component theory, fault analysis, power flow control, transmission line circuit analysis in power system.

DDWK 3702 : Project

The students should implement their project and write a report at the end of the semester.

DDWK 3711 : Power Engineering Laboratory 2

This course involves five laboratories to run experiments related to specialized subjects for second and third year students of DDWK programme which cover all the course of Electrical machine, Electrical power system and Power electronics. The course is designed to give them better theoretical understanding as well as providing them 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 Installation Work laboratory provides five practical skill of domestic wiring and consists of five electrical wiring projects.
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 conclusion and able to write a short report on the experiments done in the laboratory.

DDWK 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 the real working environment and practising their communication skills in order to solve real problems.

DDWK 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 2533 : Communication Engineering

This subject is designed to expose the students to the principle of communication in both analog, digital system and also the transmission system. It will emphasize on both analog and digital modulation concepts, which comprise amplitude modulation (AM), frequency modulation (FM), phase modulation (PM), as well as pulse code modulation (PCM). The students should also be able to understand the importance of the modulation, the advantages and disadvantages of digital system and also the conditions and characteristics of transmission line. It also will include the concept of transmission line for a signal. Also students should be able to understand the digital transmission system and types of noise that usually occur in communication system. In transmission system part students should understand the basic of: Microwaves technique: Waveguides, passive components, microwave tubes, microwave antenna. Satellite Communication Systems: History, Satellite orbits, look angles determination, Satellite system links, transponder, earth stations, Satellite frequency bands and bandwidth, Satellite in LOW and MEDIUM earth orbits, Applications: GPS. Optical Communication systems: Fiber-optic communication system, comparison between transmission lines, Optical fiber: total internal reflection (TIR), numerical aperture, modes and materials, dispersion, loses, Fiber-optic cables, splices and connectors, optical emitters: LED and Laser Diodes, optical detectors.

DDWE 3543 : Telecommunication And Switching
(Pre-requisite DDWE 2533)

The topics covered in this course are PSTN- introduction and history of the telephone system. The Basic Telephone Set: Network Connection Basics, The Telephone Set. Switching: The First Switches; Operators, Switching Emerges, Automatic Switching, Telephone Numbering Plan. Signaling: Types Of Signaling, Signaling Messages, Signaling Arrangements, Using The Telephone, Telephone Systems. Control: Progressive Control, Common Control, Stored Program Control (SPC), Control Security. Transmission Technology: Network Synchronization, Multiplexing, The Digital Signal (DS) Level System, European E-Carrier Hierarchy, Synchronous Optical Network (SONET), Data Transmission On T-1 Carriers, Frame Relay, Asynchronous Transfer Mode (ATM). Traffic Engineering: Traffic And Blocking, Erlang's Traffic Statistic For Loss System.

DDWP 3103 : Data Communication And Protocol
(Pre-requisite DDWE 2533)

This course introduces students to the data communications and networking. Topics highlighted are introduction to networks, protocols, standard and standard organization for data communication, types of network models and its layers task, digital signals, transmission impairment, data rate limits, performance, transmission mode, bandwidth utilization, switching using datagram networks and virtual circuit networks, and using telephone and cable networks for data transmission, high-speed digital/access, error detection and correction, data link control and protocols, multiple access, wired local area network (LAN), Ethernet, wireless LANs, connecting LANs, backbone networks and virtual LANs.

DDWE 2812 : Programmable Logic Controller

This subject consists of the introduction to 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. Due to hardware limitation programming is limited to using basic logic instructions.

DDWK 3132 : Electrical Machine and Drives

The course introduces into 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 which require control of speed, torque or position. The student is given background in device selection and power conditioning circuits that have applications at high power levels. Topics

DDWJ 2112 : Structure and Machines
(Pre-requisite : DDWS 1713)

This course introduces students to concepts and theories that govern a mechanical machine. It covers topics on Static, Strength of Material and Dynamic. At the end of the course, students should be able to calculate the structural strength and size and movement of a simple mechanical machine.

DDWJ 3502 : Computer Aided Drawing

The successful completion of this class will provide you the opportunity to develop significant depth of understanding and skill in using AutoCAD and manual drawing. These skills are the core CAD skills needed for employment in a CAD related business, such as in engineering design, manufacturing, architectural, construction, utilities, and others.

DDWJ 3322 : Fluid Power

The subject is the fundamental of the design of fluid power system. Before the design approach is given to the students, students will be introduced about the fluid power components and its application. The fundamental of the scientific knowledge of the fluid power system will be embedded to students, so that students may apply the scientific knowledge in designing the fluid power system.

DDWJ 2901 : Mechanical Workshop

This course presents the principles and hands-on for mechanical engineering programme. In particular, is designed to provide hands-on experience using mechanical workshop instruments. Workshops involved are lathe, welding, sheet metal or fitting workshops. At the end of workshop practices students will be given a project and have to finished in a certain given period of time.

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	Ministry of Higher Education
6. Code of Programme	T2430
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 : (3 Years) Maximum : (4 ½ Years) Part Time : Minimum : (3 ½ 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	7	14	15
Short	0	3	0	9

12. Entry Requirement	**i.** General University Requirements a. Malaysian b. Obtain Sijil Pelajaran Malaysia (SPM) with at least Six (6) credits (Grade C) inclusive of Bahasa Melayu ii. Special Programme Requirements a. Fulfill General University Requirements and obtain credit (Grade C) in the following subjects :- • Mathematics • Physics • Additional Mathematics AND

	ONE (1) from the following subjects:- • Chemistry • Sejarah • Geografi • Enginering Drawing • Engineering Technology • Mechanical Engineering Studies • Mechanical Workshop Procedure • Refrigration or Air-Condition • Vehicle Automitive • Arc Welding or Gas Welding • Additional Science or Science or Biology • Invention b. Pass with at least credit Grade C in English at SPM level or equivalent. c. Not color blind and physically disabled to conduct laboratory work.

13. Programme objectives:

This program will produce graduates that can work as mechanical assistant engineer or assistant technical to any related jobs in any engineering industry. The graduates may also further their studies for a Bachelor of Mechanical Engineering or bachelor in any related field at local or foreign universities.

Graduates of this program will be able to;

a. Apply knowledge and skills to solve technical problems and to work in multidisciplinary teams in proposing alternative solution for mechanical engineering.

b. Demonstrate professional engineering competence in mechanical engineering such as management and skills.

c. Involve in community and/or professional organizations and/or make contributions towards society.

d. Recognized the need for life-long learning via successful completion of further education, professional development and/or engineering certification.

14. Programme Learning Outcomes (PLO)			
(a) Technical Knowledge and Competencies			
Programme Learning Outcomes(PO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO1 Ability to apply knowledge of mathematics, science, humanities and engineering	Incorporate knowledge of mathematics, science, humanities and mechanical engineering principles in the development of an assistant mechanical engineer.[C3]	Lectures, tutorials, field and laboratory works, directed readings, internet searching, active and cooperative learning.	Examinations, tests, quizzes, presentation, laboratory report, project, industrial training and assignments.
PLO2 Ability to apply skills in using science and mechanical engineering tools	Exercise appropriate mathematical, computational and mechanical engineering tools and conduct field and laboratory experiments as well as analyze and interpret data to provide sustainable solutions.[P3]	Computer classes, studios, projects and field and laboratory works.	Laboratory reports, industrial training and project report.
(b) Generic Skills			
Programme Learning Outcomes(PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 Critical Thinking and Problem Solving	Identify and analyze problems as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, case studies, problem based learning.	Examination, Test, industrial training and Project
PLO4 Communication Skill	Communicate clearly and effectively in oral and/or written forms. [P3, CS3]	Individual assignments and group/mini projects	Project/assignment reports, industrial training and Presentations.
PLO5 Team Working	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Individual assignments, group/mini projects, cooperative learning and discussion.	Project, laboratory reports, industrial training and assignment.

PLO6 **Lifelong Learning**	Acquire and manage relevant information from various sources as well as accept new ideas. [A3, LL2]	Individual and group projects, directed reading, cooperative learning and discussion.	Project industrial training and assignment reports.
PLO7 **Entrepreneurship**	Recognize and identify business types and opportunities.[P3,KK1]	Group projects, directed reading, internet searching, lectures, active and cooperative learning.	Project or Assignment Reports.
PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Individual assignments, group projects and laboratory works.	Project, industrial training or Assignment Reports.
PLO9 **Leadership**	Demonstrate leadership quality. [A3, LS2]	Individual assignments, mini/group projects and laboratory works.	Project, industrial training or Assignment Reports.
15. Total credit hours to graduate		**92 credit hours**	

16. Programme structures and features, curriculum and award requirements

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

Assessment:

Final examinations (not more than 50%) and coursework. (Refer to UTM Academic Regulations)

Award requirements:

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

17. Career Prospect

Graduates of the program

a) Can work as assistant mechanical engineer or technical assistant, engineering entrepreneur and any related jobs in mechanical engineering.
b) May also continue to further their study in various disciplines related to mechanical engineering in local or abroad.

18. UTM Diploma Engineering ++ Programme

Short Course in relevant Engineering field.

19. Facilities Available

List of Laboratories :

a. Fluid Engineering laboratory
b. Strength Material laboratory
c. Mechanic Machine laboratory
d. Material Science laboratory
e. Thermodynamics laboratory
f. Flexible Manufacturing laboratory
g. Welding workshop
h. Air-conditioning workshop
i. Machining workshop
j. Automotive workshop
k. Sheet metal and fitting workshop

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
UHAS 1172	Malaysia Dynamic	2
ULAB 1032	Introductory Academic English	2
DDWS 1713	Physics	3
DDWS 1012	Engineering Mathematics 1	2
DDWJ 1911	Workshop Technology	1
DDWJ 1503	Engineering Drawing	3
DDWK 1002	Electrical Technology	2
DDWJ 1912	Experimental Method	2
TOTAL		**17**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UICD 1032	Science, Technology and Mankind	2
ULAB 1042	Intermediate Academic English	2
DDWS 1022	Engineering Mathematics 2	2
DDWS 1413	Chemistry	3
DDWJ 1931	Workshop Technology 2	1
DDWJ 1203	Statics	3
DDWJ 1512	Industrial Design	2
DDWJ 1802	Industrial Engineering	2
TOTAL		**17**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
UKQx2xx2	Co Curriculum Service Learning	2
DDWS 2033	Engineering Mathematics 3	3
DDWJ 2113	Solid Mechanics 1	3
DDWJ 2413	Thermodynamics 1	3
DDWK 2002	Electronics	2
DDWJ 2603	Material Science	3
TOTAL		**16**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
ULAB 2222	Communication Skill	2
DDWJ 2423	Thermodynamics2	3
DDWJ 2123	Solid Mechanics2	3
DDWJ 2303	Fluid Mechanics 1	3
DDWJ 2203	Dynamics	3
DDWJ 2911	Engineering Laboratory 1	1
TOTAL		**15**

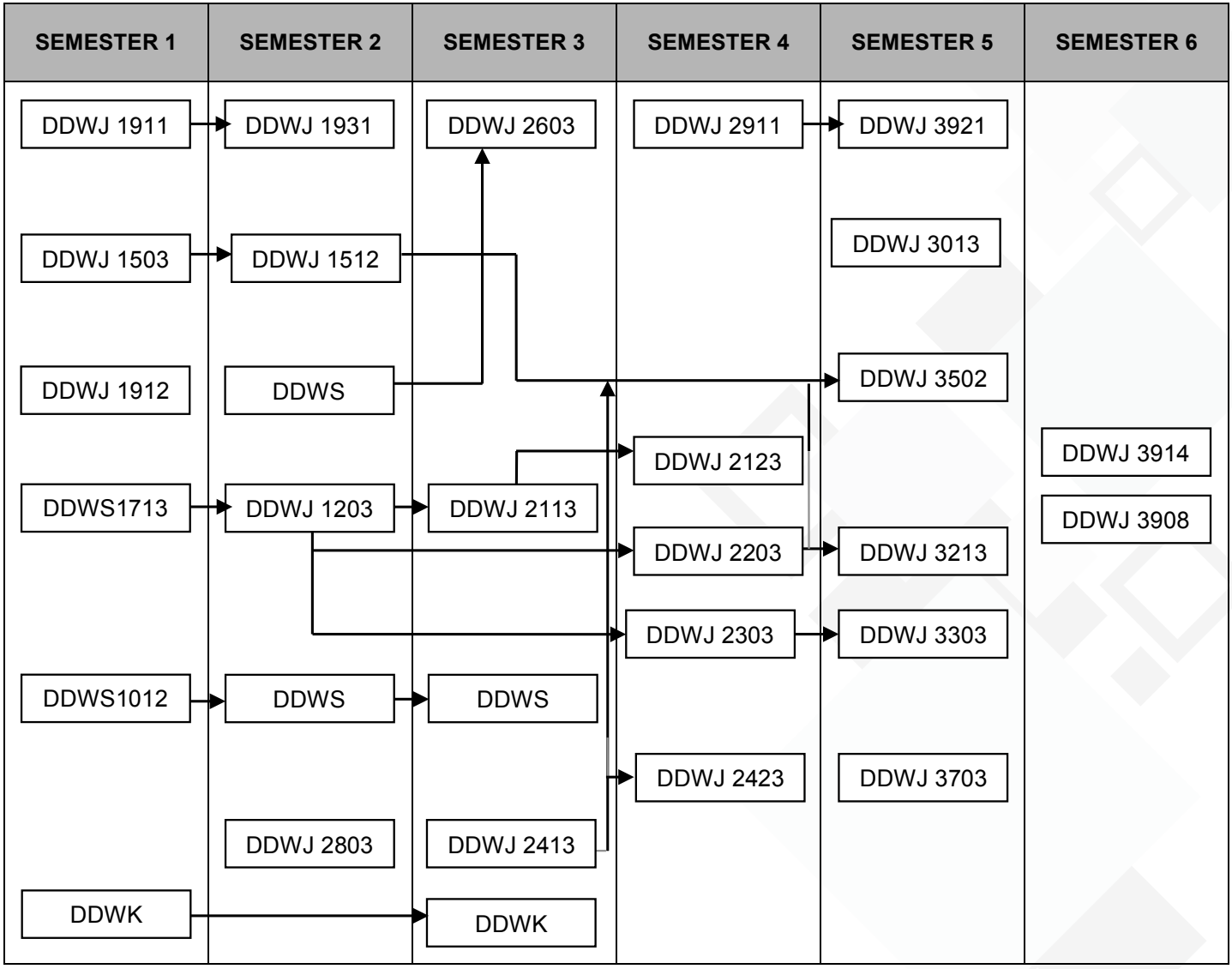
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWJ 3013	Programming	3
DDWJ 3703	Manufacturing Process	3
DDWJ 3213	Mechanics of Machine	3
DDWJ 3303	Fluid Mechanics 2	3
DDWJ 3502	Mechanical Design Project	2
DDWJ 3921	Engineering Laboratory 2	1
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



SYNOPSIS OF CORE COURSES

DIPLOMA IN MECHANICAL ENGINEERING

DDWJ 1911 : Workshop Technology 1
Theories and practices in automotive, welding, lathe, milling and air conditioning and refrigeration.

DDWJ 1503 : Engineering Drawing
Introduction to manual and A-Cad drawing, Geometric drawing, Editing and A-Cad techniques, Dimensioning, Plotting and Printing, Assembly drawing, Isometric, Orthographic, Sectioning, Machine drawing, and 3D drawing.

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 and then followed by laboratory works. The lectures shall cover the fundamental of experimental method and the basic principles in measurements, instrumentation and analysis of results. It shall focus on the design of mechanical experiments, selection of sensors and transducers, estimation of errors and display of results. It shall also cover the analysis of the results and proper report writing.

DDWK 1002 : Electrical Technology
The course introduces basic 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.

DDWJ 1931 : Workshop Technology 2
(Pre-requisite DDWJ 1911 D+)
Theories and practices in automotive, sheet metal, Fitting, Flexible machine shop- coding system and CNC latch and CNC milling and air conditioning and refrigeration.

DDWJ 1512 : Industrial Design
(Pre-requisite DDWJ 1503 D+)
This course is designed to expose students to creative design process based on scientific method by applying the fundamental principles and learning to complete projects creatively and effectively according to schedule.

DDWJ 1802 : Industrial Engineering

The course aims to provide the basic techniques of Industrial Engineering to enable the students to design improve and install integrated systems of people, materials, information and equipments. The techniques are tools to improve productivity. The topics include Introduction to Industrial Engineering, Manufacturing Engineering, Productivity, Facilities Planning and Design, Work Study, Ergonomic, Production Planning and Control, and Quality Control

DDWJ 1203 : Statics

(Pre-requisite DDWS 1713 D+)

Introduction to mechanic statics. Force as a vector quantity, equilibrium of particle in 2D and 3D, free body diagram and Force system resultants. Rigid body: moment from a point, moment from a line, couple, resultant of forces in plane, Equilibrium of two forces and three forces member, Analysis of structures: joints and sectioning methods, Frame and machine analysis. Centeroid for composite body, Papus-Galdinus theorem, Dry friction and wedges.

DDWJ 2113 : Solid Mechanics 1

(Pre-requisite DDWJ 1203 D+)

Stress analysis of simple structures, shear force and bending moment diagram, Determination of internal loading in beams and shafts, Concept of structural failure, tensile test, torsion, shearing stresses, deflection and combined stress.

DDWJ 2413 : Thermodynamics 1

Definition and basic concept of thermodynamics, properties of simple compressible substance, first law of thermodynamics–closed systems, first law of thermodynamics–open systems, second law of thermodynamics and entropy.

DDWK 2002 : Electronics

(Pre-requisite DDWK 1002 D+)

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

DDWJ 2603 : Materials Science

(Pre-requisite DDWS 1413 D+)

Introduction, Atomic structure, inter-atomic bonding and structure of crystalline solids, Crystal imperfections and diffusion, Mechanical properties of metal, Dislocation and metal strengthening mechanism, Phase transformation, Carbon steel and Non ferrous metal.

DDWJ 2423 : Thermodynamics 2
(Pre-requisite DDWJ 2413 D+)
This course give the applications of basic thermodynamics including air compression by a reciprocating compressor, the power cycles including the steam and gas turbine power plants, and internal combustion engines, the refrigeration cycle which includes the vapor compression and gas refrigeration system and heat transfer with the emphasis on the conduction mode of heat transfer and heat exchangers.

DDWJ 2123 : Solid Mechanics 2
(Pre-requisite DDWJ 2113 D+)
This course presents the applications to the stress analysis. It involves the studies on the transformation of strain and stress, the application of yield failure theories and the stress analysis of a thick cylinder. Deflection of beams and buckling of columns are then considered. The energy approach as a different approach to the stress analysis is then introduced. Finally the operations of beams and shafts are extended to the region of plastic to increase their usage using the assumption of elastic-plastic behavior.

DDWJ 2303 : Fluid Mechanics 1
(Pre-requisite DDWJ 1203 D+)
Fluid properties, Fluid statics: absolute and gauge pressure, static pressure measurement, force on plane and curved surface, buoyancy and stability. Fluid dynamics: continuity equation, Bernoulli equation, energy equation. Momentum equation: jet impact force on stationary and moving vertical, inclined plate and on stationary and moving vane. Flow measurement: Ventury meter, pitot tube, orifice meter. Flow in pipe: types of flow, friction factor, pipe roughness, Moody's chart, flow through single pipe, flow through multiple pipes system, and dimensional analysis.

DDWJ 2203 : Dynamics
(Pre-requisite DDWJ 1203 D+)
Kinematics of particle: displacement, velocity and acceleration of particle in linear and curvilinear motion, relative motion of particles, Kinetics of particle: force, Newton's second law, work, energy, impulse and momentum, Kinematics of solid body: absolute and relative motion analysis, and Kinetics of Rigid body: Moment of Inertia, Force and acceleration, work and energy.

DDWJ 2911 : 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 discussed the experiments results using techniques learned in Instrumentation and Measurement course.

DDWJ 3013 : Programming

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

DDWJ 3703 : Manufacturing Process

This course consists of introduction to manufacturing processes, common aspect in manufacturing, metal casting, bulk metal forming, sheet metal forming, forming of polymer, machining operation, non-traditional machining, joining processes, and the latest and competitive environments in manufacturing.

DDWJ 3213 : Mechanics of Machine

(Pre-requisite DDWJ 2203 D+)

This course covered analysis of gear systems, belting, balancing, crank effort diagram, governors. Other topics are free vibration, damped vibration and force vibration.

DDWJ 3303 : Fluid Mechanics 2

(Pre-requisite DDWJ 2303 D+)

The subject introduces students about a fluids dynamics principle comprises of the non-viscous and viscous fluids. The course consists of potential flow theory, boundary layer theory, compressible flow theory and Turbo machines.

DDWJ 3921 : Engineering Laboratory 2

(Pre-requisite DDWJ 2911)

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

DDWJ 3504 : Mechanical Design Project

(Pre-requisite DDWJ 2113, DDWJ 2203, DDWJ 2303, DDWJ 2413 &DDWJ 1512)

This course encourages innovative thinking and development of practices that extend the discipline and application of new technologies responsibly and creatively to meet social, cultural, economic, environmental, as well as business of contemporary and future societies. It aims to educate versatile, practical and imaginative students to meet the demands

from industry by integrating a broad spectrum of technological subjects with human factors design. The philosophy is based on understanding of function, from basic mechanisms to complex electronic devices while maintaining 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 have been thought throughout the study years. The students will be exposed to the real working environment and practising their communication skills in order 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.


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			Ministry of Higher Education	
6. Code of Programme			T2320	
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 : (3 ½ 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	7	14	15
Short	0	3	0	9
12. Entry Requirement			i. General University Requirements Obtain Sijil Pelajaran Malaysia (SPM) or equivalent with at least Six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements a. Fulfill the General University Requirementsand passed with credits (Grade C) in • Mathematics AND THREE (3) from the following subjects: • Additional Mathematics • Prinsip Perakaunan • Ekonomi Asas • Perdagangan	

	• Pengajian Keusahawanan. • Lukisan Kejuruteraan • Geografi • Sejarah • Additional Science atau Science atau Biology • Information and Comunication Technology • Rekacipta • Aplikasi Komputer Dalam Perniagaan • Pendidikan Syariah Islamiah atau Tasawwur Islam atau Pendidikan Al-Quran & As-Sunnah atau Pendidikan Islam atau Pengetahuan Moral • Teknologi Binaan Bangunan atau Pengajian Kejuruteraan Awam b. Passed with at least credit Grade C in English at SPM/equivalent.

13. Programme Educational objectives:

This Programme will produce graduates who can work as Valuation Executives, Assistant Property Managers, Property Agents, Management Executives in Property Development and Research. The graduates may also further their studies to a Bachelors of Property Management and Bachelors of Land Administration and Development or any field related to real estate at local or foreign universities.

A Diploma in Property Management graduate will achieve the following objectives:

i. Demonstrate semi-professional competency as a result from knowledge gained in propertymanagement such as property valuation, property management, property agency and property development.

ii. Solve technical problems in property management and able to work in a multidiscipline group.

iii. Be involved in community activities, professional organizations and contribute towards society.

iv. Continue their education to a higher level and self development as a semi-professional.

14. Programme Learning Outcomes (PLO)			
(a) Technical Knowledge and Competencies			
Programme Learning Outcomes(PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO1 Ability to apply knowledge of mathematics, property management and humanities	Demonstrate and apply knowledge of law, economics, mathematics, property management, and humanities in the development of a semi-professional property manager or a property entrepreneur. [C3]	Lectures, tutorials, seminars, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Presentations.
PLO2 Ability to use tools, skills and technique	Demonstrate practical skill in initial research , identify problems in property management, analyze and interpret data and report writing[P4]	Computer application, field work, assignments and projects	Project and Assignment reports
(b) Generic Skills			
Programme Learning Outcomes(PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 Critical Thinking and Problem Solving	Complete tasks and solve problems related to the property industry [P4, CTPS3]	Project based learning, active and cooperative learning, case studies, and problem based learning.	Reports, and Presentation
PLO4 Communication Skill	Communicate clearly, effectively and confidently, in oral and written forms suitable to the target groups. [P4, CS3]	Assignments, projects, and seminars.	Project/assignment reports and Presentations.
PLO5 Team working	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Assignments, projects, cooperative learning and discussion.	Project and assignment reports. Presentations and peer evaluations.
PLO6 Lifelong Learning	Acquire and manage relevant information from various sources as well as accept new ideas. [A3, LL2]	Assignments, projects, directed reading, cooperative learning, field work, surveys and discussions.	Project and assignment reports.

PLO7 **Entrepreneurship**	Recognize and identify business types and opportunities. [P3, KK1]	Assignments, projects, field work, directed reading, internet searching, lectures, active and cooperative learning.	Project and assignment reports.
PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Assignments, projects and field work.	Project and assignment reports.
PLO9 **Leadership**	Demonstrate leadership quality. [A3, LS2	Assignments and projects.	Project and assignment reports.
15. Total credit hours to graduate		**90 credit hours**	

16. Programme structures and features, curriculum and award requirements

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

Assessment:

- Courses:
  Final Examination (not more than 50 %)
  Course work
- Laboratory work:
  Final Examination (not more than 50 %)
  Course work
- Skill acquisition (Practical Training):
  100% Practical Training and Seminar

Award requirements:

Students should:

- Achieve a total of 90 credit hours with minimum CPA of 2.00

17. Our Uniqueness

a) Practical Training for 1 semester
b) Accreditation by the Board of Valuers, Appraisers and Estate Agents (BOVAE).

18.	Career Prospects and Career Paths
	Graduates of the programme 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 continue to 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.	**UTM DEGREE ++Programme**
	Foreign language courses in Mandarin, Japanese or Arabic. Career and guidance talks. Brown Paper Bag seminars.
20.	**Facilities Available**

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULAB 1032	Introductory Academic English	2
UICD 1032	Science, Technology and Mankind	2
DDWF 1413	Introduction to Real Estate	3
DDWF 1513	Building Technology	3
DDWF 1613	Introduction to Law	3
DDWF 1212	Valuation Mathematic	2
TOTAL		**15**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULAB 1042	Intermediate Academic English	2
UHAS 1172	MalaysiaDynamic	2
DDWF 1523	Building Services	3
DDWG 1023	Principles of Economics	3
DDWF 1623	Real Estate Law	3
DDWF 1423	Valuation Methodology	3
TOTAL		**16**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
DDWL 2733	Land Information & Land Tenure	3
DDWF 2533	Building Maintenance	3
DDWF 2433	Investment Valuation	3
DDWF 2232	Statistic for Real Estate Manager	2
DDWF 2333	Real Estate Management	3
UKQx 2xx2	Co-curriculum Service Learning	2
TOTAL		**16**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
ULAB 2222	Communication Skill	2
DDWF 2843	Urban Planning & Development Control	3
DDWF 2643	Real Estate Development Law	3
DDWF 2343	Real Estate Agency And Marketing Practice	3
DDWF 2443	Applied Valuation	3
DDWF 2742	Introduction to Land Development	2
TOTAL		**16**

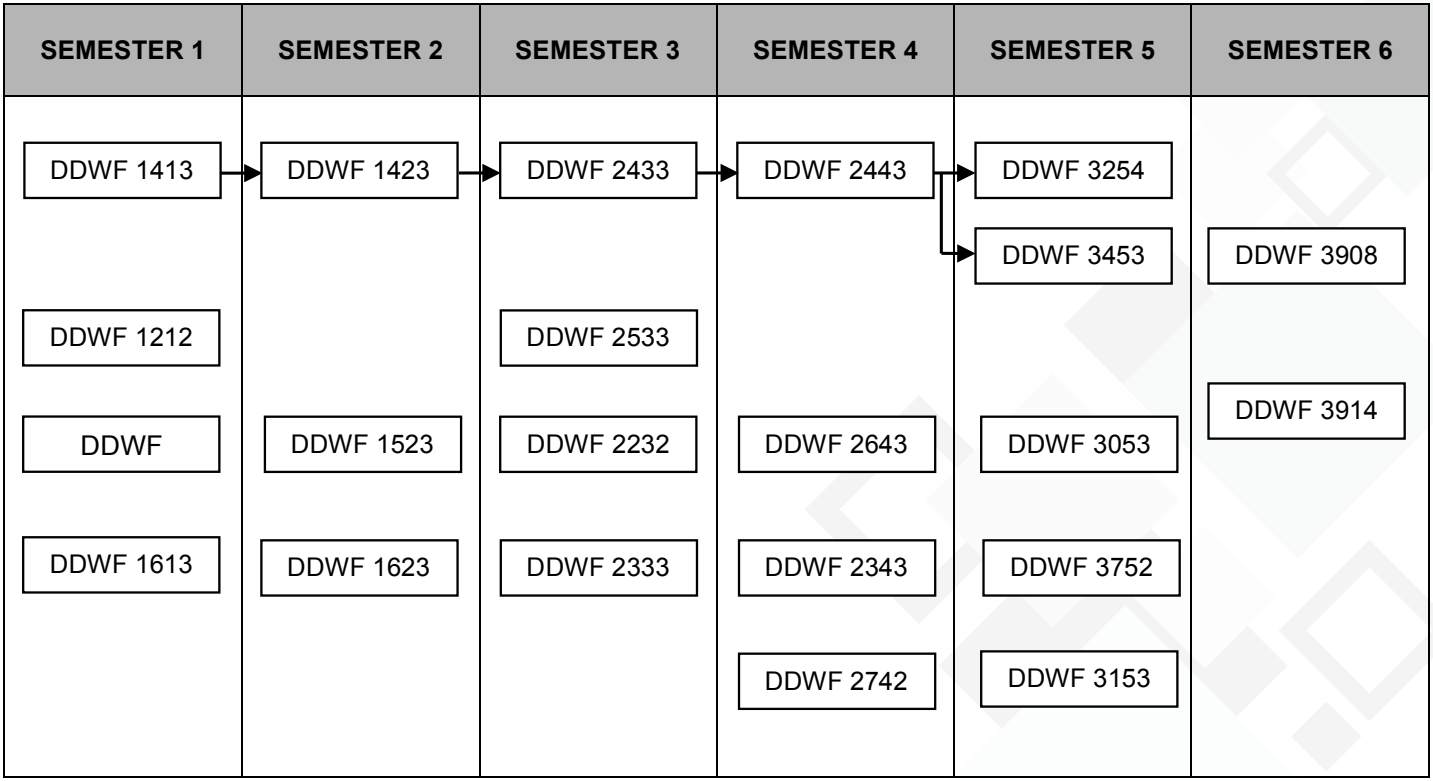
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWF 3053	Economic in Real Estate	3
DDWF 3254	Computer Application in Real Estate	4
DDWF 3453	Statutory Valuation	3
DDWF 3752	Project Management	2
DDWF 3153	Introduction to Accounting And Finance	3
TOTAL		**15**

YEAR 3 (SEMESTER 6)

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

PRE-REQUISITE
DIPLOMA IN PROPERTY MANAGEMENT



SYNOPSIS OF CORE COURSES

DIPLOMA IN PROPERTY MANAGEMENT

DDWF 1413: Introduction to Real Estate

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.

DDWG 1023: Principles of Economy

This course is design to expose students to basic economical level. This 3 credit subject will consist of both theories and concepts in microeconomics and macroeconomics at a foundation level. The course starts with basic principle of microeconomics, demand and supply, market equilibrium, consumer behavior, 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 1513: Building Technology

This course introduces students to some major views, the process, the elements and the theories of building environment development in Malaysia, under the Uniform Building Act 1984. It will emphasize on the general concepts of introduction to the building development process, building structure, bond working, building services, concrete working, wood working, and building finishing, drawing and reading the floor plan and calculate the building area based on floor plan.

DDWF 1613: Introduction to Law

The course is divided into several parts. The first part is designed to introduce students to the legal and administrative system in Malaysia. Such understanding is necessary since they will have to deal with various government agencies and provisions of the law in the later part of their career. Basically, it shall start by discussing the definition of law, roles and functions of law in upholding the legal and justice system, types of laws available during the pre –Independence, the current laws and their relevance to DDWF students.

The second part concentric 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. In continuation with the above, students shall be able to differentiate elements of contract under the civil and conventional law and also the Islamic law of contract.

The third part focuses on law of agency, the principles that are applicable in agency and formation of an agency, rights and obligations of both the agent and principles towards each other and third parties.
The fourth part briefly discusses the law of tort specifically on negligence to accommodate the specific needs of the course for DDWF students.

DDWF 1523: Building Services

This course introduces students to some major views and theories in environment of building services in Malaysia based on the Uniform Building Act 1984. It will emphasize on the general concepts of introduction to the building services, the water supply system, electricity supply system, drainage system, air system etc. At the end of these courses, students should be able to appreciate the building services environment 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 1212: Valuation Mathematics

This course introduces students to some major views and theories in concepts, practices and applications of mathematics in their daily activities and property valuation process. Student s need to understand the subject, so that they are able to apply the valuation mathematics concepts in the following subjects such as property management and property valuation. The course covers topics such as linear equation, nonlinear equation, arithmetic and geometric sequences, simple interest, compounded interest, annuity, instalment purchases, valuation mathematic, valuation parry's table, depreciations etc.

DDWF 1423: Valuation Methodology
(Pre-requisiteDDWF 1413)

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 "Manual of Valuation Standards" produced by the Board of Valuers, Appraisers and Estate Agents, 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 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 are led to develop skills to communicate effectively, to lead and cooperate as team members, be highly motivated, disciplined and ethical.

DDWF 1623: Real Estate Law

The course is designed to introduce students to applicable laws governing land matters in Malaysia and its close relationships with any type of landed 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.

DDWF 2343: Real Estate Agency and Marketing 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 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 and analyzing the investment alternatives. Students shall also be exposed to 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 2232: Statistic for Real Estate Manager

This course consists of introduction to statistics for property manager. Before 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. Analyze the data is very important to property manager and using the result of analysis for decision-making or for management. Analysis of statistics consists of measure of central tendency and dispersion, correlation and simple linear regression, 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.

DDWL 2723: 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, and 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 2333: Real Estate Management

This course introduces students to some major views, theories and practices in property management as one of the important profession in the real estate industry. It emphasizes on the general concepts of property management, introduces the theory and best practice of tenancy management for several types of properties and examines the major elements in tenancy agreement. It will also cover some other important areas of property management such as building maintenance, property marketing, data management, security management, and car park management. At the end of the course, students should be able to apply the theories and demonstrate their understanding towards the profession by completing some assignments and final project.

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

This course introduces students to applied valuation with reference to "Manual of Valuation Standards" produced by the Board of Valuers, Appraisers and Estate Agents, Malaysia. It covers determining factors affecting value, collecting, selecting and analyzing data to be used in property valuation, application of appropriate valuation methods in valuing residential properties, commercial properties, industrial properties, agricultural properties, development land, special properties, and valuation for insurance purposes and also 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 "Manual of Valuation Standards". 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 2533: Building Maintenance

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

DDWF 2742: 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 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 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 urban planning practice in Malaysia, relate urban planning to land matters, calculate development charges on conversion of land-uses and increase in density, and 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 2643: Real Estate Development Law

The course is designed to introduce students to applicable laws governing land and property development law in Malaysia and the close relationships with the provisions of NLC and authorities of local councils. 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 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 3053: Economic In Real Estate

An introduction the theory and concepts of land economic and urban land economic. This coursesconsists of Part 1 (Land Economics) and Part II (Urban Land Economics). The subtopics in Part 1 are economic land and characteristics, structure or property market, property investment, economic return on land, the allocation of land sources, land development, land planning, the role of government in property marketing etc. In Part II, student must understand the theory of rental and replacement, Theory of Von Thunen, Theory of Alonso; land value and land use; Urban StructureTheory, factors that affect the land use style, accessibility, complimentarily, land use marketing and replacement; housing, commercial, office and industrial.

DDWF 3153: 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 3453: Statutory Valuation
(Pre-requisite DDWF 2443)

This subject consists of introduction to valuation statutory; the concepts and basic needs of statutory valuation and the acts which it's involve in the valuation of the property. The purpose of statutory valuation is divided into 3. 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 and lastly, 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 "Manual of Valuation Standards". 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 3752: Project Management

This course consists of introduction to general concepts and principles of project development management including the development stages, project management method, roles of project manager's, planning and project development technique, project monitoring and evaluation.

DDWF 3254: 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, real estate agency and property investment analysis using Excel and Access applications. It covers Excel application in building valuation tables, usage of simple statistical analysis and computer aided valuation in valuing different types of properties. Property investment analysis covers discounted cash flow, internal rate of return and netpresent value. Access application covers creating a database, querying a database and maintaining a database for use in property. The students are also introduced to drawing of building plans and preparation of location and site plans using Visio and Google Earth and Wikimapia respectively. At the end of this course, students should be able to use and apply their knowledge and skills related to Excel and Access application in property valuation, able to apply simple statistical analysis in property, able to carry out property investment analysis and able to create, query and maintain data base system, draw building plans and prepare location and site plans.

DDWF 3908: Industrial Training

This course consists of practical training at various property management and valuation firms or government industry such as JPPH, UDA, DBKL, and Local Authority. The purpose of the course: the student will get knowledge and experiencefrom direct industry. The major course is divided into 3 – Property valuation, property management and real estate agency. At the end of this course, students should be able to use and apply their professional knowledge and skills in property valuation, property management and estate agency. Through this course, students are led to develop skills to communicate effectively, to lead and cooperate as team members, be highly motivated, disciplined and ethical.

DDWF 3914: Industrial Training Report

This course focus on the sharing of practical training knowledge and experience at various industrial such as property management, property valuation, and estate agency.The purpose of the course: the student will be express their knowledge and experience and made any suggestions to the department panel of industrial training. At the end of this course, students should be able to use and apply their professional knowledge and skills in property valuation, propertymanagement and estate agency through the effectively communication. This course, students are led to develop skills to communicate clearly and effectively either written and oral forms

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	Ministry of Higher Education
6. Code of Programme	T2270
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	7	14	15
Short	0	3	-	9

12. Entry Requirement	**i**.General University Requirements a. Obtain Sijil Pelajaran Malaysia with Six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Program Requirement a. Fulfill the General University Requirements and obtain credit (Grade C) in the following subjects: • Mathematics AND THREE (3) of the following subjects: • Prinsip Perakaunan • Ekonomi Asas • Perdagangan • Additional Mathematics • Information and Communication Technology **or**

	RekaCipta • Additional Science **or** Science **or** Biology **or** Physics **or** Chemistry • Geografi**or**Sejarah • PendidikanSeni Visual **or** PendidikanSyariahIslamiah**or**Tasawwur Islam **or**Pendidikan Al-Quran & As-Sunnah **or**PendidikanIslam **or**Pengetahuan Moral **or** Bahasa Arab b.Pass with at *least credit* (Grade C) in English at SPM level / equivalent.

13. Programme objectives:

This program will produce graduates that can work as assistant administrative officer, line supervisor and assistant executive (administrative and finance). The graduate may also further their studies for a Bachelor of Technology Management or bachelor in any related field at local or foreign universities.

To fulfill the objective of this programme, the graduate should be able to:

a. Solve managerial problems in management and technology and to work in multidisciplinary teams in proposing alternative solutions.

b. Demonstrate skills in management theories and technique logically, creatively and analytically based on sound facts and ideas.

c. Involve in community and/or professional organizations and/or make contributions towards society.

d. Continue studies at higher level and self-development as a professional.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes(LPO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 **Ability to apply knowledge in management and technology**	Incorporate knowledge of mathematics, management, accounting, and humanities in the development of an assistant executive. [C3]	Lectures, tutorials, directed reading, internet searching, active and cooperative learning.	Tests, quizzes, Examinations, Assignments, Presentation.

PLO2 **Ability to use theories, techniques, skills and approach related to management and technology**	Exercise appropriate management techniques, skills and approach for an organization related to manufacturing and service industries. [P4]	Lectures, tutorials, computer practical classes, cooperative learning and group projects.	Quizzes, tests, examinations, assignments and reports, group project.
(b) Generic Skills			
Programme Learning Outcomes(PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 **Critical Thinking and Problem Solving**	Identify and analyze problems as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, case studies, problem based learning.	Examination, Tests, Project Report and Presentation
PLO4 **Communication Skill**	Communicate clearly and effectively in oral and/or written forms. [P3, CS3]	Individual assignments and group projects	Project/assignment reports &Presentations.
PLO5 **Team Working**	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Individual assignments, group/mini projects, cooperative learning and discussion.	Project/assignment reports and Presentations.
PLO6 **Lifelong Learning**	Acquire and manage relevant information from various sources as well as accept new ideas. [A3, LL2]	Individual and group projects, directed reading, cooperative learning and discussion.	Project and assignment reports.
PLO7 **Entrepreneurship**	Recognize and identify business types and opportunities.[P3, KK1]	Group projects, directed reading, internet searching, lectures, active and cooperative learning.	Project /assignment reports.
PLO8 **Ethics**	Demonstrate and practice professionalism and ethical values. [A3, EM2]	Individual assignments, mini/group projects and laboratory works.	Project /assignment reports.
PLO9 **Leadership**	Demonstrate leadership quality. [A3, LS2]	Individual assignments, mini/group projects and laboratory works.	Project or assignment reports.
15. Total credit hours to graduate		**90 credit hours**	
16. Programme structures and features, curriculum and award requirements			
This programme is offered on full-time and part time mode and is based on a 2-Semester Academic Session with several subjects being delivered and assessed in each semester.			

Assessment:
Final exam (not more than 50%) + course work (refer to UTM's academic regulations).

Award requirements:
Students should:
Achieve a total of 90 credit hours with minimum CPA of 2.00

17. Career Prospects and Career Paths

Graduates of the program can work as:

a) Diploma holders can work as assistant administrative officer, line supervisor and assistant executive (administration and finance).

b) 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).

18. UTM Diploma++ Programme

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

19. Facilities Available

List of Laboratories:

a. Computer Laboratory (Accounting Software – MYOB, UBS and Mr. Accounting)
b. Language Laboratory
c. AutoCAD Laboratory
d. Sheet Metal and Fitting Workshop

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
UHAS 1172	Malaysia Dynamic	2
ULAB 1032	Introductory Academic English	2
DDWG 1133	Principles of Management	3
DDWG1413	Foundation of Microeconomics	3
DDWC 1013	Microcomputer Application	3
DDWG 1123	Introduction to Business	3
TOTAL		**16**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UICD 1032	Science, Technology and Mankind	2
ULAB 1042	Intermediate Academic English	2
DDWG 1423	Principles of Macroeconomics	3
DDWG 1513	Financial Accounting 1	3
DDWG 1143	Organizational Behavior	3
DDWG 1113	Business Mathematics	3
TOTAL		**16**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULAB 2222	Communication Skills	2
UKQX 2xx2	Co-Curriculum Service Learning	2
DDWG 2523	Financial Accounting 2	3
DDWG 2233	Principles of Marketing	3
DDWG 2213	Business Statistics	3
DDWG 2243	Technology Management	3
TOTAL		**16**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWC 2013	Management Information System	3
DDWG 2533	Introduction To Finance	3
DDWG 2253	Entrepreneurship	3
DDWG 2223	Introduction To Operations Management	3
DDWJ 2733	Manufacturing Process	3
TOTAL		**15**

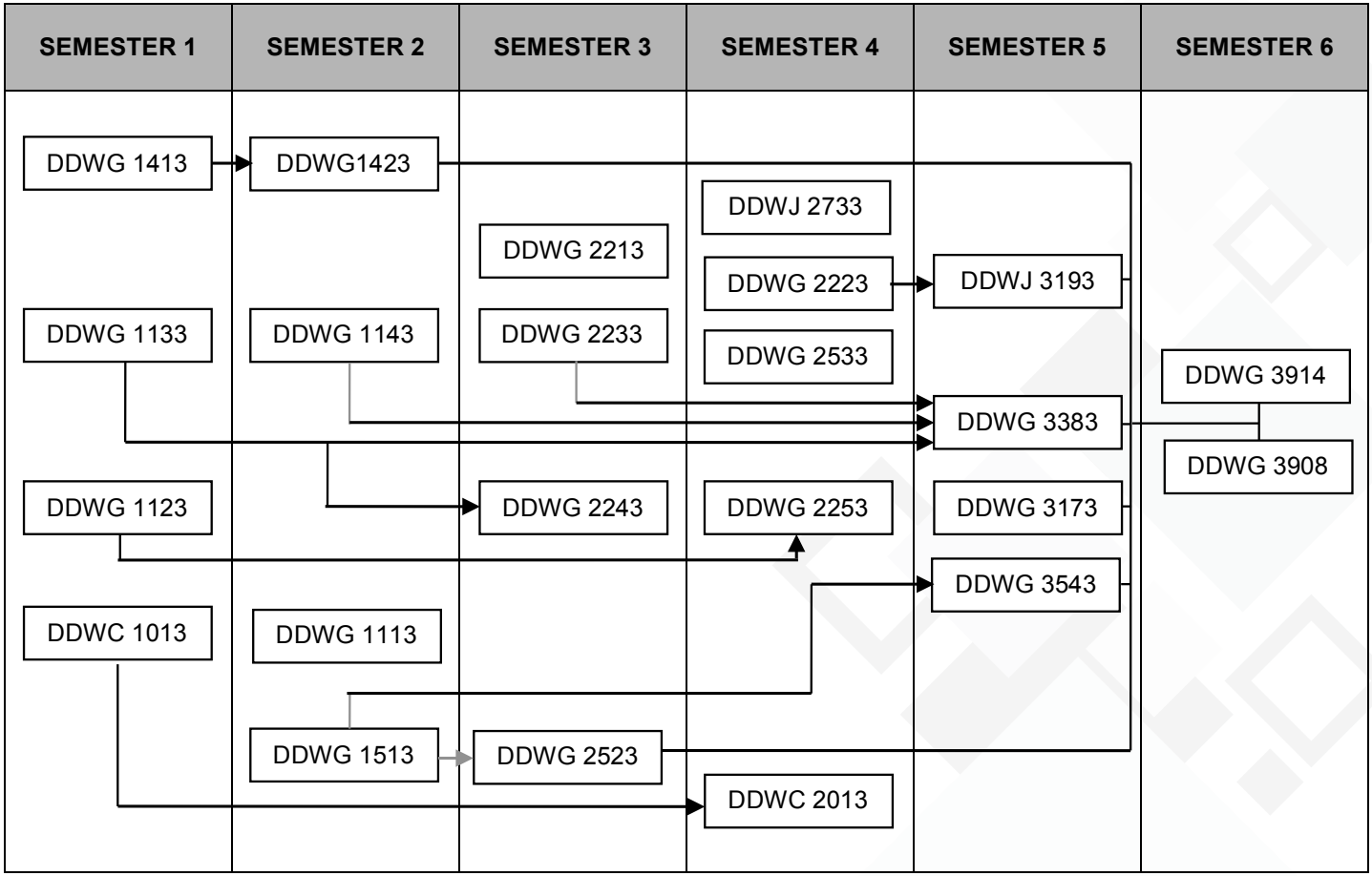
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWG 3173	Commercial Law	3
DDWG 3323	Human Resource Management	3
DDWG 3543	Cost Accounting	3
DDWG 3383	Interpersonal Communication	3
DDWJ 3193	Production and Planning Control	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 controling. Included are topics such as managerial competencies, trends that affect management of organizations, human resource management, motivation and innovation. This course highlights the importance of communication to managers, and the elements required of an effective presentation. In addition, it will also introduce students to the basic concepts that form the basis of management in Islam.

DDWG 1413 : Foundation of Microeconomics

This course is designed to expose students with basic concept of economics. This subject will consist of both theories and concepts in microeconomics. It will emphasize on the basic human problems as well as basic economics problem. It will discuss on theory of demand, theory of demand, elasticity of demand and supply, market equilibrium. Theory of consumer behaviour, theory of production and cost of production, market structures: perfect competition, monopoly market Monopolistic market and oligopoly market.

DDWC 1013 : Microcomputer Application

The subject 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.

DDWG 1123 : Introduction to Business

This chapter describe about business atmosphere, economics and business system plus the business system plus the business acts in Malaysia. Students will learn how to start, plan and organized a business. Business, students will get more, knowledge on business capital, sources of financing, the stock market and so on.

DDWG 1423 : Foundation of Macroeconomics
(Pre–requisite: DDWG 1413)

This course is designed to expose students to the basic economics level. This subject will 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.

DDWG 1513 :Financial Accounting I

This course is designed to introduce accounting concepts to students such as accounting equation, double entry system, ledger and journals, types of asset, liabilities and capital and also preparation of trading, profit and loss account, income statement and statement of financial position. Besides that this course also introduces how to evaluate stocks, preparation of bank reconciliation and control accounts. 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, statement of financial position, stock valuations and other accounting reports.

DDWG 2233 : 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 behaviours 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, instalment payment, and depreciation.

DDWG 1143 : Organizational Behavior
(Pre–requisite: DDWG 1133)

This course is designed to expose students to the concepts and theories in organizational behaviour 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 2523 : Financial Accounting II
(Pre-requisite DDWW 1113)

This course serves as a continuation from Financial Accounting I. Topics covered are accounting for depreciation, accounting for correction of errors, introduction to financial reporting entity in various types of business organization and preparation of internal control, accounting for manufacturing organizations, the financial statement for partnership,

revaluation of partnership assets and partnership dissolution, financial statement for limited companies, accounting for the issue of shares and accounting for department.

DDWG 2243 : Technology Management
(Pre-requisite DDWG 1123)
This course is designed to introduce students to the basic theories of technology usage in business. The impact and types of technology life cycle, product development and innovation in technology in order to solve business problems.

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.

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.

DDWG 3543 :Cost Accounting
(Pre-requisite DDWG 1513)
This course is designed to provide basic knowledge about cost accounting. It will cover various topics including cost terms, concept, cost behavior and cost analysis. Analysis includes variance analysis, BEP, product costing, product pricing, profit planning, and budgeting and performance evaluation. Identification of relevant and irrelevant costs and benefits to make a decision is also covered.

DDWG 2323: Human Resource Management
(Pre-requisite: DDWG 1133, DDWG 1143)
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 an 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.

DDWC 2013 : Management Information System
(Pre-requisite DDWC 1013)
Definition, development and MIS example, theory of management and organization, information and human, information application and implication of the information designed system, decision making, information system concept in MIS, organization and information management system.

DDWJ 3193 : Production Planning and Control
(Pre-requisite DDWG 2223)
Drawingonaspects ofproductionandproductivityinthemanufacturing and servicesector, emphasison the core activitiesinvolvedinproduction planning and forecasting control, capacity planning, inventory management, aggregateplanning, materialrequirementsplanning, short-term planning, managementproject, andmaintenance management.

DDWG 3383 :Interpersonal Communication
(Pre-requisite ULAB 1042, DDWG 1133, DDWG 1143)
This course provides basic training in interpersonal communication skills 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 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, types of laws were available during the pre–Merdeka day as well as the current laws and their relevancy to DDWG students. It shall focus too on the process of law making by the legislative bodies of Malaysia, its procedures, the roles of the Malay Rulers before a law could be implemented. The second part of the course shall 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. In continuation of the above, the course then 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 and requirements of each commercial law transactions above would be discussed to enable students to understand its significance and differences.

DDWG 2253 : Entrepreneurship (Pre-requisite DDWG 1123)

This course will provide an overview of the basic concepts on entrepreneurship focusing on the nature, environment, and risks of new venture formation and building of businesses. It is designed to explore the personality of the entrepreneur and how innovative business ideas are created. Students will learn to consider various types of business models, and conduct feasibility studies. Students will also be exposed to various mini case studies of the real world companies involved in the technology business. Active participation by students during class discussions and activities is encouraged and expected. At the end of the course students will be able to develop business plan that is appropriate for different business purposes.

DDWG3908: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 technology management jobs and works.

DDWG3914: 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 share experiences to the others.

PROGRAMME SPECIFICATIONS

1. Programme Name	Diploma in Technology Management (Accounting)
2. Final Award	Diploma in Technology Management (Accounting)
3. Awarding Institution	UTM
4. Teaching Institution	UTM
5. Professional or Statutory Body of Accreditation	Ministry of Higher Education
6. Code of Programme	T2271
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	7	14	15
Short	0	3	0	9

12. Entry Requirement	i. General University Requirements c. Malaysian d. Obtain Sijil Pelajaran Malaysia (SPM) with at least Six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements d. Fulfill the General University Requirements and passed with credits (Grade C) in • Mathematics AND THREE (3) of the following subjects : • Prinsip Perakaunan

	• Ekonomi Asas • Perdagangan • Additional Mathematics • Information and Communication Technology or Reka Cipta • Additional Science or Science or Biology or Physics or Chemistry • Geografi or Sejarah • Pendidikan Seni Visual or Pendidikan Syariah Islamiah or Tasawwur Islam or Pendidikan Al-Quran & As-Sunnah or Pendidikan Islam or Pengetahuan Moral or Bahasa Arab h. Pass with at *least credit* (Grade C) in English at SPM level / equivalent

13. Programme Educational Objectives:

v. To produce competent and versatile accounting graduates who are able to be assistants for accountants, auditors, tax consultants, finance managers and management teams.

vi. To prepare accounting graduates to become members of accounting professional bodies that is nationally/ internationally recognized or pursue gradutes or advance studies in accounting or the chosen field of interest.

vii. To provide a platform for graduates to develop career and education in an accounting profession.

viii. To produce accounting graduates with effective interpersonal skills.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 **Ability to apply knowledge of accounting, management and humanities**	Incorporate knowledge of mathematics, accounting, management and soft skills in the development of an assistant accountant. [C3]	Lectures, Tutorials, Directed Reading, Internet Searching, Active Cooperative Learning and Industrial Training.	Quizzes, Tests, Assignments, Presentations, Examinations, and Industrial Training Report.

PLO2 **Ability to use theories, techniques, skills and approach related to accounting and management**	Demonstrate the ability of using the techniques, skills and accounting and/or management approaches. [P4]	Lectures, Tutorials, Computer Practical Classes, Cooperative Learning and Industrial Training.	Quizzes, Tests, Assignments, Examinations, and Industrial Training.
(b) Generic Skills			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 **Critical Thinking and Problem Solving**	Identify and analyse problems as well as propose alternative solutions. [P3, CTPS3]	Active and Cooperative Learning and Case Studies.	Quizzes, Tests, Assignments, Presentations and Examinations.
PLO4 **Communication Skill**	Communicate clearly and effectively in oral and/or written forms. [P3, CS3]	Assignments, Cooperative Learning and Discussions and Industrial Training	Assignments, Presentations, Examinations and Industrial Taining Report & Presentation.
PLO5 **Teamworking**	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Assignments, Industrial Training, Cooperative Learning and Discussion.	Assignments and Industrial Training .
PLO6 **Lifelong Learning**	Acquire and manage relevant information from various sources as well as new ideas. [A3, LL2]	Assignment, Directed Reading, Cooperative Learning and Discussion and Industrial Training	Assignment Reports and Industrial Training Report
PLO7 **Entrepreneurship**	Recognize and identify business types and opportunities.[P3, KK1]	Lectures, Assignments, Directed Reading, Internet Searching, Active and Cooperative Learning.	Assignment Reports and Presentations.
PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Lectures, Assignments, and Industrial Training.	Assignments and Industrial Training.
PLO9 **Leadership**	Demonstrate leadership quality. [A3, LS2]	Lectures, Assignments, and Industrial Training.	Assignments and Industrial Training.
15. Total credit hours to graduate		**90 credit hours**	
16. Programme structures and features, curriculum and award requirements			
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.

Assessment (Refer to UTM's Academic Regulations):

- 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 minimum CPA of 2.00

17. Our uniqueness

Diploma of Technology Management (Accounting) students' will go through five months of Industrial Training with established accounting and audit firm of government sector in order to expose them with the real working experience as an assistant accountant or audit assistant. 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 purpose. In addition, they are equipped with Islamic foundations to be applied in the world of accounting or finance.

18. Career Prospects

Diploma of Technology Management (Accounting) holders' can work as an 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.

19. UTM Diploma++ Programme

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

20. Facilities available

i. Computer Laboratory (Accounting Software – MYOB)
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
UHAS 1172	Malaysia Dynamic	2
ULAB 1032	Introductory Academic English	2
DDWG 1113	Business Mathematics	3
DDWG 1133	Principles of Management	3
DDWW 1113	Financial Accounting 1	3
DDWW 1313	Computer Application in Accounting	3
TOTAL		**16**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UICD 1032	Science, Technology and Mankind	2
ULAB 1042	Intermediate Academic English	2
DDWG 1413	Principles of Microeconomics	3
DDWG 2213	Business Statistics	3
DDWG 2233	Principles of Marketing	3
DDWW 1123	Financial Accounting 2	3
TOTAL		**16**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULAB 2222	Communication skills	2
UKQ* 2**2	Co-curriculum Service Learning	2
DDWG 1423	Principles of Macroeconomics	3
DDWW 2133	Management Accounting	3
DDWW 2213	Financial Management	3
DDWW 2323	Accounting Information Systems	3
TOTAL		**16**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWG 3383	Interpersonal Communication	3
DDWW 2143	Intermediate Accounting	3
DDWW 2223	Islamic Financial System	3
DDWW 2413	Business Law	3
DDWW 2513	Taxation 1	3
TOTAL		**15**

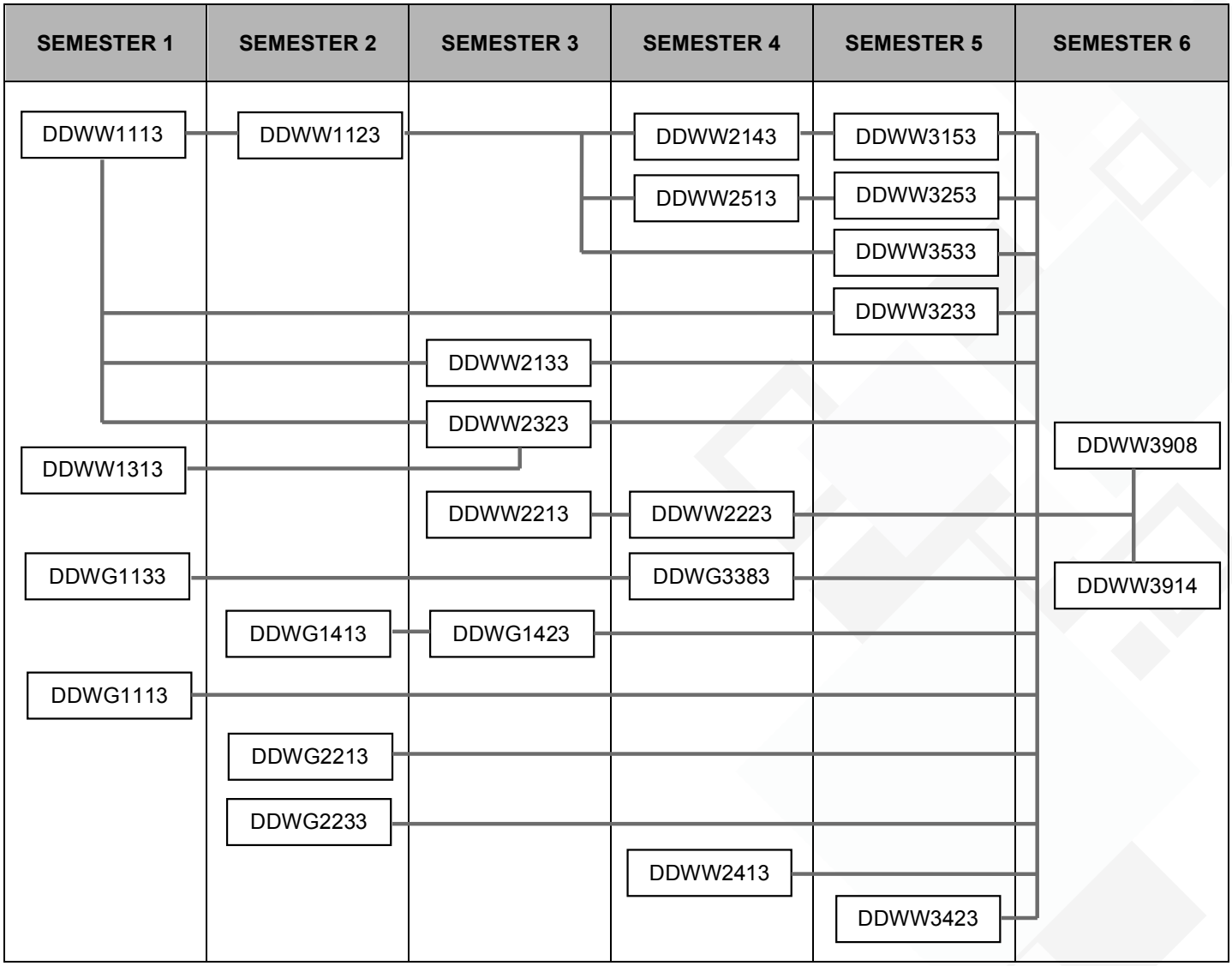
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWW 3153	Advanced Financial Accounting	3
DDWW 3233	Introduction to Islamic Accounting	3
DDWW 3423	Partnership and Company Law	3
DDWW 3523	Taxation 2	3
DDWW 3533	Audit	3
TOTAL		**15**

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWW 3908	Industrial Training	8
DDWW 3914	Industrial Training Report	4
TOTAL		**12**
TOTAL CREDITS		**90**

PRE-REQUISITE
DIPLOMA IN TECHNOLOGY MANAGEMENT (ACCOUNTING)



SYNOPSIS OF CORE COURSES

DIPLOMA IN TECHNOLOGY MANAGEMENT (ACCOUNTING)

DDWG 1113 : Business Mathematics

This course is designed 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 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 management of organizations, human resource management, motivation and innovation. This course highlights the importance of communication to managers, and the elements required of an effective presentation. In addition, it will also introduce students to the basic concepts that form basis of management in Islam.

DDWW 1113 : Financial Accounting 1

This course is designed to introduce accounting concepts to students such as accounting equation, double entry system, ledger and journals, types of asset, liabilities and capital and also preparation of trading, profit and loss account, income statement and statement of financial position. Besides that this course also emphasizes in the internal control of cash account and preparing the bank reconciliation, and inventory valuation. 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, and bank reconciliation.

DDWW 1313 : Computer Application in Accounting

This course is designed to introduce students about basic skills in computer usage. Students will be taught on computer concepts and the use of general applications such as Microsoft word, excel, access and power points in accounting works.

DDWG 1413 : Principles of Microeconomics

This course is designed to expose students with basic concepts of economics. This subject will consist of both theories and concepts in microeconomics. It will emphasize on basic human problems as well as basic economic problems. It will discuss on theory of demand, elasticity of demand and supply, market equilibrium, consumer behaviour, production and cost production, market structures; perfect competition, monopoly market, monopolistic market and oligopoly market.

DDWG 2213 : Business Statistics
This course is designed to expose students to 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 emphasizes 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 2233 : 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 behaviours 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.

DDWW 1123 : Financial Accounting 2
(Pre-requisite DDWW 1113)
This course serves as a continuation from Financial Accounting 1. Topics covered are accounting for internal control and check - control accounts, correction of errors and incomplete records. It also includes the introduction to financial reporting entity in various types of business organization, emphasizing the financial statement for non-profit-oriented organisations; clubs and public sectors, and profit-oriented organisations; manufacturing entities, branch accounts, partnerships - revaluation of partnership assets and partnership dissolution, The course ends with the introduction and preparation of financial statements for limited company.

DDWG 1423 : Principles of Macroeconomics
(Pre-requisite DDWG 1413)
This course is designed to expose students to the basic economic level. This subject 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, balance of payment and exchange rate.

DDWW 2133 : Management Accounting
(Pre-requisite DDWW 1113)
This course is an introduction to cost and management accounting. It is designed to provide an understanding of the main elements which determine the cost of a product. The course also focuses on the application of fundamental costing methods and techniques and covers some aspects of managerial accounting which are mainly used for decision making purposes.

DDWW 2213 : Financial Management
This course focuses on the basic principles and techniques in making financial decisions. It covers both the concepts of financial management as well as the applications of financial techniques as tools for making decisions. The topics

covered include financial statement analysis, financial forecasting and planning, working capital management, risk and return relationship, short and long term financing, time value of money and its applications, capital structure policy, mergers and acquisition and risk management.

DDWW 2323 : Accounting Information System
(Pre-requisite DDWW 1113 & DDWW 1313)
This course is designed to introduce students about environment in accounting information system (AIS). Students will be taught on threats and controls, reliable systems, computer fraud, system development in AIS. This course will focus on two cycles, revenue cycle and expenditure cycle as examples of AIS applications. In addition students will be taught in details on accounting software (MYOB).

DDWG 3383 : Interpersonal Communication
(Pre-requisite DDWG 1133)
This course provides basic training in interpersonal communication skills relevant for human relations and for organisational 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.

DDWW 2143 : Intermediate Accounting
(Pre-requisite DDWW 1113 & DDWW1123)
This course is designed to provide in-depth knowledge about the accounting and financial reports for companies especially on statement of comprehensive income and statement of financial position. It is also cover important items on assets liabilities and equities. This course also will discuss issues on recognition of revenue and preparation of cash flow.

DDWW 2223 : Islamic Financial System
(Pre-requisite DDWW 2213)
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', 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.

DDWW 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 were available during the pre–Merdeka day as well as the current laws and their relevancy to DDPW students. It shall focus too on the process of law making by the legislative bodies of Malaysia, its procedures, the roles of the Malay Rulers before a law could be implemented. The second part of the course shall 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. In continuation of the above, the course

then 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 and requirements of each commercial law transactions above would be discussed to enable students to understand its significance and differences.

DDWW 2513 : Taxation 1
(Pre-requisite DDWW 1113 & DDWW 1123)
This course is design to expose the student every detail aspects of personal taxation in Malaysia. It will focus on types of taxable income such as business income, employment income and unearned revenue, types of relief and rebate and status of residents. Besides that, this course also introduces some theories on 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, the student should be able to apply the theory and prepare personal taxation to arrive at tax payable for each related year of assessment.

DDWW 3153 : Advanced Financial Accounting
(Pre-requisite DDWW 1113, DDWW 1123 & DDWW 2143)
This course is designed to enable students to acquire basic skills of company accounting. Topics covered include the application of accounting entries for business combination by amalgamation or absorption, business conversion to a company, business reconstruction (internal or external) and how to prepare and present consolidated financial statements of a holding company.

DDWW 3233 : Introduction to Islamic Accounting
(Pre-requisite DDWW 1113)
This course covers an initial attempt to bring into the fore the interactions of Islam with a modern discipline. It is also intended to become an initial attempt to discuss the preliminary theory of Islamic accounting and to explain the nature of Islamic accounting practice in Islamic institutions.

DDWW 3423 : Partnership & Company Law
The course is designed to generally introduce students to types of business organization that could be formed as business generating profit tools that are available in Malaysia. It shall firstly introduce them to partnership and its advantages as compared to sole proprietorship. From thereon they 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.

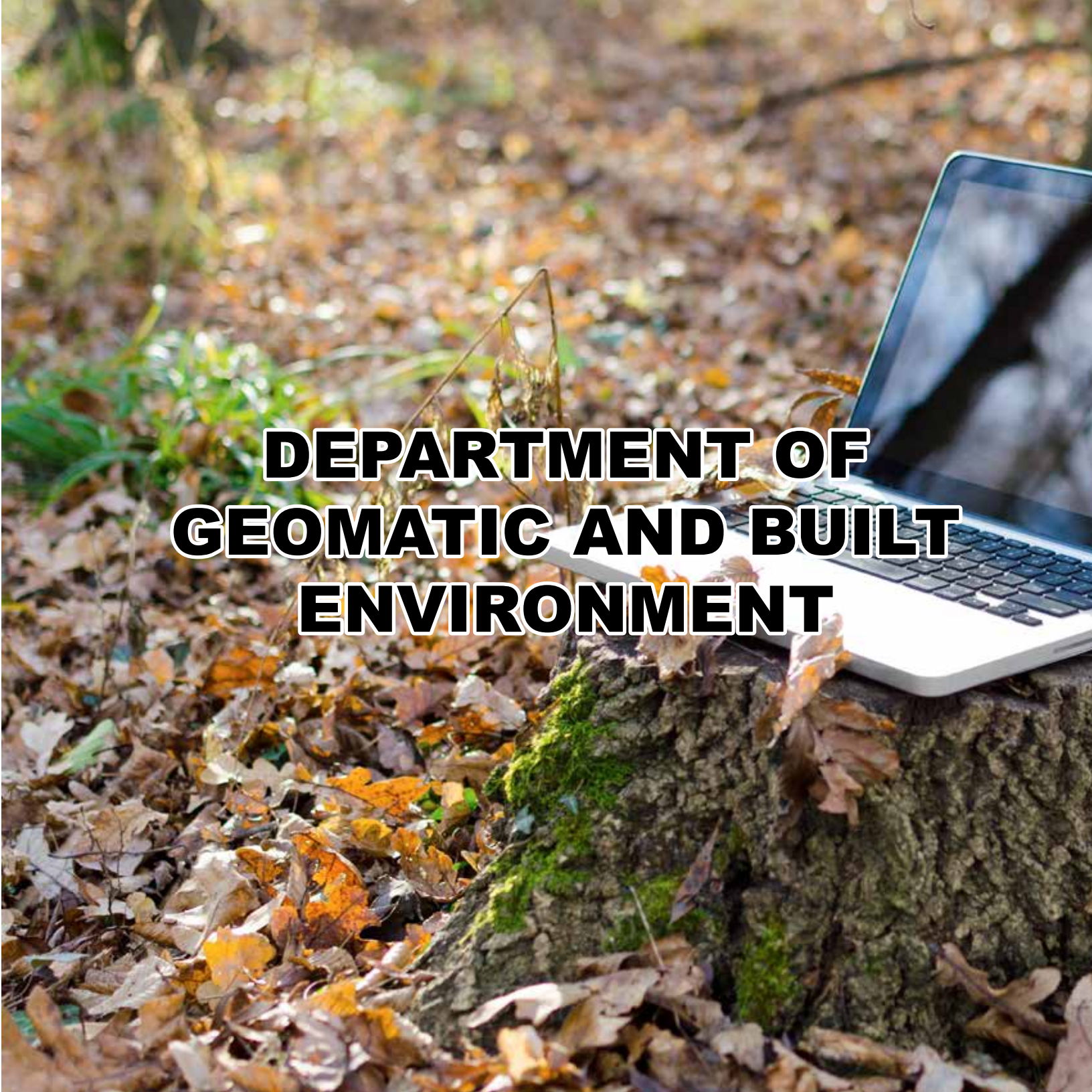
The second part of this course shall discus focus on company law, differences between a company and a partnership, cooperation, foundation and subsidiary. Students shall be exposed to the advantages of setting up a company, the nature of a company, its rights and liabilities. The management of a company, company financial resources and the rights and responsibilities of the top level managers (chairman, directors, board of directors or CEO of a company) shall be discussed too. This course shall be discussed about the assets of company, management of those assets and what happened to those assts when a company is dissolved.

DDWW 3523 : Taxation 2
(Pre-requisite DDWW 1113, DDWW 1123 & DDWW 2513)
In this subject, students will be exposed to taxation of partnership and company in Malaysia. They will learn how to calculate tax for partnership and also the company's taxation structure. The structure of company's taxation included topics such as industrial building allowance, basis period and change of accounting date and tax administration for 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.

DDWW 3533 : Audit
(Pre-requisite DDWW 1113 & DDWW1123)
This course introduces students to theories, procedures and application of auditing in an organization. Topics covered are 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.

DDWW 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 the real working environment and practising their communication skills in order to solve real problems.

DDWW 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 GEOMATIC AND BUILT ENVIRONMENT

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	Ministry of Higher Education
6. Code of Programme	T2330
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	i. General University Requirements a. Malaysian b. Obtain Sijil Pelajaran Malaysia (SPM) and obtaining at least Six (6) credits (grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements a. Fulfilling the University General Requirements and obtaining credits (grade C) • Mathematics **AND** • Three **(3)** from the following subjects:- • Additional Mathematics • Geography • History • Information and Communication

	Technology • Visual Art or Invention • Principles of Accounting • Commerce • Basic Economics • Additional Science or Science or Biology • Physics • Chemistry • Building Construction Technology or Civil Engineering Studies • Engineering Drawings • Syariah Islamic Studies or Islamic Tasawwur or Al-Quran Studies and As-Sunnah or Islamic Studies or Pengetahuan Moral. **AND** • Pass with at *least credit* (**Grade C**) in English at SPM level or equivalent

13. Programme Educational objectives:

Graduate of this programme should be able to:

- Demonstrate semi-professional competency as a result from knowledge gained in quantity surveying such as plan and manage cost and contractual procedures in construction projects.
- Solve technical problems in quantity surveying and able to work in a multidiscipline group.
- Be involved in community or professional organisations or contribute towards society.
- Continue their education to a higher level and self-development as a semi-professional.

14. Programme Learning Outcomes (PLO)			
(a) Technical Knowledge and Competencies			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO1 Ability to demonstrate and apply knowledge of mathematics, construction, quantity surveying and social science and humanities	Demonstrate and apply knowledge of law, economics, mathematics, construction measurement, contract administration, humanities and co-curriculum in the development as an assistant quantity surveyor [C1-C3]	Lectures, tutorials, group work, directed reading, online searching, active and cooperative learning.	Test, Quiz, Tutorial, Final Exam, Project or assignment report, Hands-on assignment, Presentations and Studio Work.
PLO2 Ability to use tools, skills and techniques	Apply the practical skill in initial research, identify problems in quantity surveying, analyse and interpret data and report writing [P1-P4]	Computer application, academic visit, studio work, field work and projects	Test, Quiz, Tutorial, Final Exam, Project or assignment reports, Academic visit report, Hands-on assignment, Presentation, Industrial Training Report and Integrated Project Report, Field work report and Studio Work.
(b) Generic Skills			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 Critical Thinking and Problem Solving	Actualise the task and problem solving in related to construction industry. [P3,CTPS1-CTPS3]	Active and cooperative learning, case study teaching, and problem based learning.	Tutorial, Field work report, Studio work, Project or assignment reports and Presentation
PLO4 Communication Skill	Communicate clearly, effectively and confidently in oral and/or written forms to target group. [P3,CS1-CS4]	Problem based learning, case study teaching, active and cooperative learning	Project or assignment report, Academic visit report and Presentation.
PLO5 Team Working	Work collaboratively as part of a team undertaking a range of different team roles. [A3,TS1-TS4]	Peer instruction, cooperative learning and discussion.	Field work, Project or assignment report, Presentations and Peer assessment

PLO6 **Lifelong Learning**	Acquire and manage relevant information from various sources as well as accept new ideas. [A3,LL1-LL2]	Problem based learning, directed reading, cooperative learning, field work, survey, internet searching and discussion.	Project or assignment report.
PLO7 **Entrepreneurship**	Recognise and identify business types and opportunities. [P3,KK1]	Problem based learning, field work, directed reading, online searching, lectures, active and cooperative learning.	Project or assignment report
PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values. [A3,EM1-EM2]	Active and cooperative learning, directed reading	Project or assignment report.
PLO9 **Leadership**	Demonstrate leadership quality. [A3,LS1-LS2]	Active and cooperative learning, peer instruction	Project or assignment report, Peer assessment
15. Total credit hours to graduate		**92 credit hours**	

16. Programme structures and features, curriculum and award requirements

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.

Assessment (Refer to academic regulation):

a) Final examination not more than 50 % and course work not more than 60%
b) Passing marks for all courses is 40% except for measurement cluster courses which is 50%.
c) Skill acquisition:
100% Industrial Training including industrial report and integrated project

Award requirements:

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

17. Our Uniqueness

c) Industrial Training for one (1) semester during Semester 5.
d) Accreditation by the Board of Quantity Surveying Malaysia and Royal Institution of Surveyors Malaysia

18.	**Career Prospects and Career Paths**
	Graduates of the program c) Can work as Technical Assistant / Assistant Quantity Surveyor both government sector and private sector. d) 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 enrol 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 (Buildsoft Global Estimate, AutoCAD) b. Language Laboratory c. Civil Engineering Workshop d. Studio

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULAB 1032	Introductory Academic English	2
UHAS 1172	Malaysia Dynamic	2
DDWQ 1113	Construction Technology 1	3
DDWQ 1123	Draughtmanship	3
DDWQ 1213	Introduction to Construction Measurement	3
DDWQ 1312	Construction Mathematics	2
DDWQ 1612	Information Communication Technology	2
TOTAL		**17**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULAB 1042	Intermediate Academic English	2
UICD 1032	Science, Technology and Mankind	2
DDWQ 1173	Construction Technology 2	3
DDWQ 1132	Building Services 1	2
DDWQ 1223	Construction Measurement 1	3
DDWQ 1322	Principles of Economics	2
DDWQ 1522	Professional Practice 1	2
TOTAL		**16**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULAB 2222	Communication Skills	2
DDWQ 2173	Construction Technology 3	3
DDWQ 2153	Construction Materials and Specifications	3
DDWQ 2233	Construction Measurement 2	3
DDWQ 2353	Building Economics 1	3
DDWQ 2412	Principles of Law and Torts	2
TOTAL		**16**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
DDWQ 2142	Building Services 2	2
DDWQ 2162	Engineering Survey	2
DDWQ 2172	Principles of Structure	2
DDWQ 2243	Construction Measurement 3	3
DDWQ 2363	Building Economics 2	3
DDWQ 2422	Principles of Contract and Agency	2
DDWQ 2542	Professional Practice 2	2
TOTAL		**16**

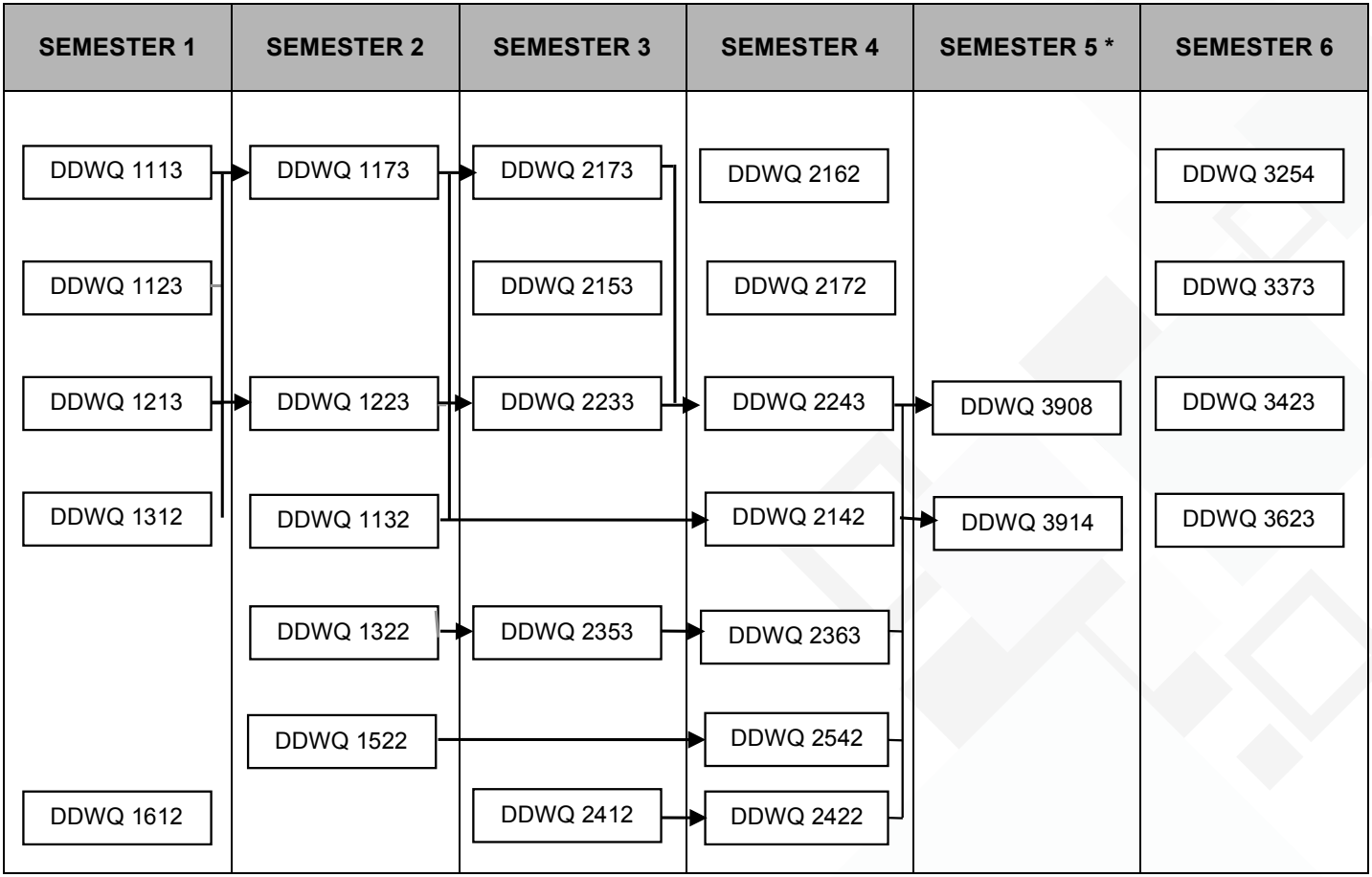
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWQ 3908	Industrial Training	8
DDWQ 3914	Industrial Training Report and Integrated Project	4
TOTAL		**12**

YEAR 3 (SEMESTER 6)

Code	Course	Credit
UKQX 2XX2	Co-Curriculum Service Learning	2
DDWQ 3254	Measurement Project	4
DDWQ 3373	Cost Estimating	3
DDWQ 3423	Construction Law and Contract	3
DDWQ 3623	Principles of Management	3
TOTAL		**15**
	TOTAL CREDITS	**92**

PRE-REQUISITE
DIPLOMA IN QUANTITY SURVEYING



Notes : * 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 methods of various building component such as sub-structure, super-structure and finishes of a domestic and commercial building less than 5-storey high. This course covers the aspects of design principles, process of construction, fixing, assembling of the various elements and components.

DDWQ 1123: Draughtmanship

This course will cover the theoretical and practical aspects of technical and building drawing practices including the process and tools of the production of the drawing. This course also introduces the concept of Building Information Modelling in relation to quantity surveying.

DDWQ 1213: Introduction to 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 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 Malaysian Standard Method of Measurement (SMM2)

DDWQ 1312: Construction Mathematics

Quantity surveying is a technical discipline which requires the collection, processing and use of numerical data. It is therefore essential that students develop an acceptable understanding of the mathematical methods and techniques required for these key activities, and of how to apply them correctly. This course explores the rules for manipulation of formulae and equations, calculation of lengths, areas and volumes, determination of trigonometric and geometric properties, and the application of graphical and statistical techniques. Upon completion students will be able to select and apply appropriate mathematical techniques to address a wide variety of standard, practical, industry-related problems.

DDWQ 1612: Information Communication Technology

This course is designed to provide an introduction to computers, basic programming and applications software. Areas of study include IT policy and ethics, computer hardware, internet, problem solving 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.

DDWQ 1173: Construction Technology 2
(Pre-requisite DDWQ 1113)

This course is to develop the students with knowledge and understanding of construction technology and its application to the construction of medium span and commercial building. It will examine the construction process of substructures, superstructures, enclosure and finishes for medium span and commercial building.

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 buildings which comprises of water supply installation, soil and waste disposal system, electrical and lighting installation, gas supply installation, lightning protection system and communication system.

DDWQ 1223: Construction Measurement 1
(Pre-requisite DDWQ 1113, DDWQ 1123, DDWQ 1213, DDWQ 1312)

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.

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.

DDWQ 1522: 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 bodies 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 bodies and institutions; roles of quantity surveyors at pre and post contract stages, and professional ethics. The course also provides the environment to develop students' communication skills and the ability to work effectively as a team member to achieve mutual objective.

DDWQ 2173: Construction Technology 3
(Pre-requisite DDWQ 1173)
This course is to develop an understanding of external work and special construction. The course will provide students with skills to allow the evaluation of arrange of technologies towards the adoption of an appropriate design decision and knowledge of the centrality of technological decision making in the context of the wider construction process. The course also provides the platform to develop students' communication skills and the ability to work effectively as a team member to achieve mutual objective.

DDWQ 2153: Construction Materials and Specifications
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 also provides the platform to develop students' communication skills and the ability to work effectively as a team member to achieve mutual objective.

DDWQ 2233: Construction Measurement 2
(Pre-requisite DDWQ 1173, DDWQ 1132, DDWQ 1223)
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.

DDWQ 2353: 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.

DDWQ 2412: Principles of Law and Torts
This is a foundation subject designed to prepare students to undertake effectively the subject of Construction Law and Contract in Year 3. It basically introduces students to two areas of law such as Malaysian Legal System, sources of law, and the courts' system. The second area is Law of Torts. Law of Torts will cover negligence, occupier's liability, trespass and nuisance.

DDWQ 2142: 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 systems.

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 2172: 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 introduce to structural elements.

DDWQ 2243: Construction Measurement 3
(Pre-requisite DDWQ 2173, DDWQ 2233)

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 2363: Building Economics 2
(Pre-requisite DDWQ 2353)

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 while enhancing the accuracy and reliability of these methods and techniques. This course covers all aspects of cost management during pre-construction and construction stages of project development.

DDWQ 2422: Principles of Contract and Agency
(Pre-requisite DDWQ 2412)
This is a foundation subject designed basically to introduce students to two areas of the law that form the basis of construction contract; Law of Contract: (discusses all the main principles in the law of contract. The discussions are more comprehensive and detail than the earlier two areas above. The second area is Law of Agency which is deals with the formation of agent-principal relationship and the interactions between them

DDWQ 2542: Professional Practice 2
(Pre-requisite DDWQ 1522)
This course introduces students to the process and procedures at pre and post contract stage and develops their knowledge and understanding of the terms and conditions contain 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, procurement system and contract documents; part two covers works related to post contract administration. This course covers quantity surveying practices based on standard forms of contract currently applicable in Malaysian construction industry with more emphasis to the PWD and PAM Standard Form of Contract.

DDWQ 3908: Industrial Training
(Pre-requisite DDWQ 2173, DDWQ 2243, DDWQ 2142, DDWQ 2363, DDWQ 2542, DDWQ 2422)
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 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 3914: Industrial Training Report and Integrated Project
(Pre-requisite DDWQ 2173, DDWQ 2243, DDWQ 2142, DDWQ 2363, DDWQ 2542, DDWQ 2422)
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 course, the students should be able to present information and 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 3373: 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 to the students the important clauses in the various standard forms of construction contract. The objectives are: to explain to the students the principles and the implications of the main terms of construction contract, and 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. The course also provides the platform to develop students' communication skills and the ability to work effectively as a team member to achieve mutual objective.

DDWQ 3623: Principles of Management

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 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	Ministry of Higher Education
6. Code of Programme	T2340
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 : (3 ½ 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	7	14	15
Short	0	3	0	9

12. Entry Requirement

i.General University Requirements:

Obtain Sijil Pelajaran Malaysia(SPM) with at least Six (6) credits (Grade C) inclusive of Bahasa Melayu

ii. Special Programme Requirements:

a. Fulfill the General University Requirements and passed with credits (Grade C) in:
   - Mathematics

   AND

   THREE (3) of these subjects:
   - Additional Mathematics
   - Lukisan Kejuruteraan
   - Ekonomi Asas

	• Pengajian Kejuruteraan Awam • Pengajian Kejuruteraan • Geografi • Sejarah • Physics **or** Chemistry • Additional Science **or** Science **or** Biology • Pendidikan Seni Visual **or** Reka Cipta • Teknologi Maklumat dan Komunikasi **or** Reka Cipta • Hortikultur Hiasan dan Lanskap **or** Lanskap dan Nurseri **or** Sains Pertanian • Prinsip Perakaunan **or** Perdagangan • Pendidikan Islam **or** Pendidikan Syariah Islamiah **or** Tasawwur Islam **or** Pendidikan Al-Quran dan As-Sunnah **or** Bahasa Arab Tinggi **or** Pengetahuan Moral b. Pass with at *least credit* (**Grade C**) in English at SPM level or equivalent.

13. Programme Educational objectives:

This program will produce graduates who can work as Assistant Town Planner in government and private sector or any related industry. The graduates may also further their studies for a Bachelor of Urban and Regional Planning or bachelor in any related field at local or foreign universities.

A graduate of this programme should be able to:

- Demonstrate semi-professional competency as a result from knowledge gained in urban and regional planning.
- Solve technical problems in urban and regional planning and able to work in a multidiscipline group.
- Involve in community activities or professional organizations or makecontributions towards society.
- Continue their education to a higher level and self development as a professional.

14. Programme Learning Outcomes			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
(a) Technical Knowledge and Competencies			
PLO1 Ability to demonstrate and apply knowledge of urban and regional planning **(Knowledge)**	Demonstrate and apply knowledge of art and science in urban and regional planning and humanities in the development as an assistant town planner or a planner entrepreneur. [C3]	Lectures, studio projects, directed reading, critique sessions, fieldwork, 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
PLO2 Ability to use tools, skills and techniques for urban and regional planning practice **(Practical Skill)**	Apply techniques and skills and able to explain rules and laws in urban and regional planning [P4]	Lectures, studio projects, critique sessions, fieldwork, problem based learning and industrial training	Tests, quizzes, examinations, individual and group assignments, presentations, individual and group studio projects and industrial training report
(b) Generic Skills			
PLO3 **Critical Thinking and Problem Solving**	Identify and analyze problems as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, problem based learning, fieldwork, critique sessions and studio projects	Studio project verbal presentations, individual and group studio projects, individual and group assignments
PLO4 **Communication Skill**	Communicate clearly, effectively with confidence in oral and/or written forms which appropriate with targeted group. [P3, CS3]	Individual and group studio projects and assignments, fieldwork, industrial training	Industrial training report, studio projects, assignments, presentations and seminar paper
PLO5 **Team Working**	Work collaboratively as part of a team undertaking a range of different team roles. [A2, TS3]	Studio projects and assignments, fieldwork	Group studio projects and group assignments

PLO6 **Lifelong Learning**	Acquire and manage relevant information from various sources as well as accept new ideas. [A3, LL2]	Studio projects, directed reading, cooperative learning, fieldwork, assignments and discussions	Assignments and studio projects
PLO7 **Entrepreneurship**	Recognize and identify business types and opportunities.[P3, KK1]	Studio projects, assignments, fieldwork, directed reading, lectures, active and cooperative learning	Projects and assignments
PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Studio projects, assignments, projects, critique sessions, fieldwork and industrial training	Studio projects, industrial training report, seminar paper, learning log/diaries and group and individual assignments
PLO9 **Leadership**	Demonstrate leadership quality. [A3, LS2]	Studio projects and assignments	Group studio projects, group assignments and portfolio
15. Total credit hours to graduate		**91 credit hours**	

16. Programme structures and features, curriculum and award requirements

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

Assessment: (Refer to UTM AcademicRegulations).

- Lecturebased courses:
  Final Examination (not less than 40%)
  Coursework
- Skill-based courses:
  100% course work
- Studio Courses:
  100% projects
  As a pre-requisite to the next level of studio courses, student should obtain **minimum grade of C** in studio course.

Award requirements:

Students should achieve a total of 91 credit hours with minimum CPA of 2.00.

17. Our Uniqueness

Student will go through 5 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.

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 enroll 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
UHAS 1172	Malaysia Dynamic	2
ULAB1032	Introductory Academic English	2
DDWN 1013	Introduction To Planning	3
DDWN 1023	Site Planning	3
DDWN 1045	Studio 1: Basic Design	5
TOTAL		**15**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UICD 1032	Science, Technology and Mankind	2
ULAB1042	Intermediate Academic English	2
DDWN 1093	Neighborhood Planning and Design	3
DDWN 1203	Computer Aided Design in Planning	3
DDWN 1213	Planning and Environment	3
DDWN 1055	Studio 2: Layout 1 (Housing)	5
TOTAL		**18**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
UKQX 2XX2	Co-Curriculum Service Learning	2
DDWN2203	Land Use Planning	3
DDWN 2213	Survey & Statistical Techniques	3
DDWN 2273	Rural Planning and Development	3
DDWN 2065	Studio 3: Layout 2 (Business Park)	5
TOTAL		**16**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
ULAB 2222	Communication Skills	2
DDWN 2243	Geographic Information System in Planning	3
DDWN 2253	Urban Design	3
DDWN 2263	Urban Engineering	3
DDWN 2075	Studio 4: Layout 3 (Mixed-Development and Development Proposal Report)	5
TOTAL		**16**

YEAR 3 (SEMESTER 5)

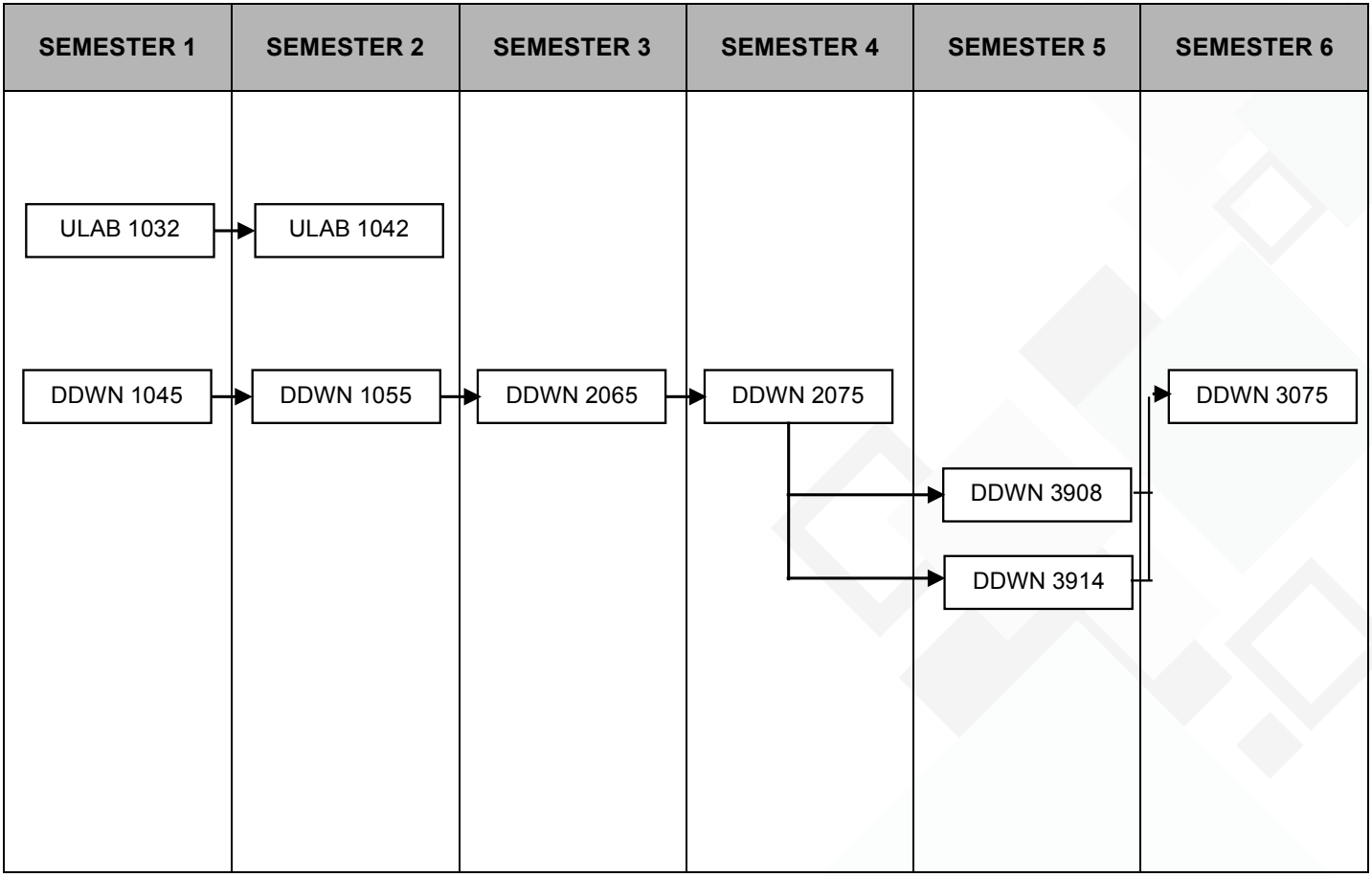
Code	Course	Credit
DDWN3908	Industrial Training	8
DDWN3914	Industrial Training Report and Seminar	4
TOTAL		**12**

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWN 3173	Urban Economics	3
DDWN 3193	Planning Law and Practice	3
DDWN 3203	TrafficEngineering	3
DDWN 3075	Studio 5: Urban Area Improvement Study	5
TOTAL		**14**
TOTAL CREDITS :		**91**

PRE-REQUISITE

DIPLOMA IN URBAN AND REGIONAL PLANNING



SYNOPSIS OF CORE COURSES

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. Students are exposed to urban civilization from the beginning of 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.

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 to do site suitability analysis for the site assigned from site inventory, site analysis and site design and implementation stages. Student also will be exposed to related skills and techniques in doing site planning exercise such as slope, grading and hydology analysis.

DDWN 1045 : Studio 1: Basic Design

This course focuses on the basic design and also various communication techniques such as visual, verbal and effective report writing. Graphic communication namely the freehand sketching, colouring technique, composition technique, axonometric and perspective drawing and the draughtsmanship skills. The environmental awareness will be exposed to sharpen the student sensitivity towards the environment and to nurture the ability to recognize the 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.

DDWN 1093 : Neighbourhood Planning and Design

In this course, students will be introduced to the neighborhood planning and design. It will include introduction to neighborhood planning and design, the neighborhood, neighborhood unit, building place and defining space, environmentally benign development and design, access and movement, integrating other uses, designing safe neighborhood area, approaches to layout design, social life in outdoor residential spaces and space management concepts in neighborhood area. At the end of this course, the students will have the complete knowledge on how to plan and design a good neighborhood or residential area that livable and vibrant.

DDWN 1203 : Computer Aided Design in Planning

This course is designed to familiarize students with all aspects of the basic version of AutoCAD and Sketchup, 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. By the end of the course, students will able to produce a clear and well laid-out paper drawing and 2D and 3D modelling and relate it to the theories and current situations in urban and regional planning context. Basic introduction to Adobe Illustrator also will be introduced to the students in order to help them using the medium to produce a good panel presentation.

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. This subject targeted that urban and regional planning student will be more sensitive in tackling the environmental issues before dealing with any development plan or planning permission application.

DDWN 1055 :Studio 2 : Layout 1 (Housing)
(Pre-requisiteDDWN 1045)

Students will be exposed to basic skills on the preparation of housing layout plans. The course content comprises the basic principles of site planning and analysis also the use of planning standards and guideline in designing a housing layout. On top of that, the course also focuses on design concept and 3D layout for a particular area using the computer software such as Sketchup.At the end of semester, each student will acquire knowledge on how to produce a housing layout plan and also present their work.

DDWN 2203 : Land Use Planning

This course will discuss on land use planning and development. This course is deliberately designed to provide students with a better understanding on definitions and differences of various types of land use, the dynamics of land uses and its inter-linkages, land use planning theory, principles and process, and tools for land use control.

DDWN 2213 : Survey and Statistical Techniques

This course will focus on survey and statistical techniques which include the scope of survey, collecting survey data and analysing survey data. The students will learn how to use the SPSS software to manage and analyse the survey data. Student will have to go through the real survey on the site to ensure they will get experience and get to know how a survey is being conducted in real life.

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. Student will also acquire knowledge and see the difference on rural planning and development in developing countries and developed country.

DDWN 2065 :Studio 3 : Layout 2 (Business Park)
(Pre-requisite DDWN 1055)

Students will be exposed to basic skills on the preparation of business park layout plans. The course content comprises the basic principles of site planning and analysis also the use of planning standards and guideline in designing a business park layout. On top of that, the course also focuses on design concept and 3D layout for a particular area using the computer software such as Sketchup. At the end of semester, each student will acquire knowledge on how to produce a business park layout plan and also present their work.

DDWN 2243 : Geographic Information System in Planning

This course provides students with the opportunity to get to know better several aspects and issues related to urban area. The course also offered the students with exposure to information technology in planning. Through this course, students will learn, do research or acquire several techniques and approaches in Geographic Information System (GIS) and relate it to the theories and current situations in urban and regional planning context.

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 techniques of research and designing urban areas are also provided.

DDWN 2263 : Urban Engineering

In this course, students will be introduced to the planning and basic design of infrastructure namely highway, road and drainage system. Students also will be introduced to the water supply planning, sewerage system planning, electrical supply planning, natural gas, solid waste management system and telecommunication system planning. Students will be exposed with the technical terms used by the town planner and engineer in infrastructure and utility planning. At the end of the semester, students will have the understanding regarding engineering aspects in planning and able to apply the knowledge to produce good layout plans.

DDWN 2075 :Studio 4 : Layout 3 (Mixed-Development and Development Proposal Report)

(Pre-requisite DDWN 2065)
The course provides students with exposure of preparing a Development Proposal Report (DPR) for a mixed development layout as practice in Planning Approval Submission. The course content comprises of data gathering, literature review, site survey (land use, community facilities, infrastructure, etc),preparation of site platform levels, building setbacks, access and building utilities, and development control elements such as plot ratio, utility reserves, landscape, circulation, and vehicular parking. On top of that, the course also focuses on design concept and 3D layout for a particular area using the computer software such as Sketchup.

DDWN 3908 : Industrial Training (Pre-requisite DDWN 2075)
This course exposes the students to urban and regional planning practice and procedures. Students will be attached to urban planning firms or government departments for a period of 20 weeks. At the end of the industrial training, students should be able to demonstrate the application of techniques, skills and tools in urban and regional planning practices professionally and ethically. 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. Students also have 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.

DDWN 3914 : Industrial Training Report and Seminar(Pre-requisite DDWN 2075)
This course exposes the students to urban and regional planning practice and procedures. Students will be attached to urban planning firms or government departments for a period of 20 weeks. At the end of the industrial training, students should be able to demonstrate the application of techniques, skills and tools in urban and regional planning practices professionally and ethically. 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. Students also have 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.

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 locational determinants of economic activity, the property investments and the development process. On top of that, students will be exposed to the real situation in construction industry 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

This course introduces basic knowledge on planning practice aspects in urban and regional planning in Malaysia. The content covers the government administration structure, Town and Country Planning Department, Town and Country Planning Act (with amendments), National Land Code, development control, tools in development control and its execution.

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. This course will also make sure the students aware on the traffic engineering elements in designing a layout plan in the future.

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

The course content will focus on urban area elements which comprise land use activity, buildings, urban infrastructure and utilities, traffic and transportation, landscape, natural environment and urban design. For this course, theories and knowledge from site planning, urban design, urban engineering, traffic engineering and land use planning will be used specifically throughout the semester to accomplish the project given. Student will have to plan and redesign the layout of chosen urban area in order to make it more vibrant and sustainable. Student will learn how to make detail survey for the relevant urban development elements in order to help them to complete the project given.

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			Ministry of Higher Education	
6. Code of Programme			T2300	
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-govern	
10. Study Scheme (Full Time/Part Time)			Full-time	
11. Study Duration			Minimum : 6 Semester (3 Years) Maximum : 9 Semester (4½ Years)	
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part time
Normal	6	-	14	-
Short	0	-	-	-
12. Entry Requirement			i. General University Requirements a. Malaysian b. Obtain Sijil Pelajaran Malaysia (SPM) minimum Six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements a. Fulfill the General University Requirements and passed with credits (Grade C) in: • Mathematics AND THREE (3) of the following subjects: • Additional Mathematics • Physics or Chemistry • Additional Science or Science or Biology • Teknologi Kejuruteraan or Pengajian Kejuruteraan Awam	

	• Lukisan Kejuruteraan • Prinsip Perakaunan or Ekonomi Asas or Perdagangan • Pendidikan Seni Visual • Pendidikan Syariah Islamiah or Tasawwur Islam or Pendidikan Al-Quran dan As-Sunnah or Pendidikan Islam or Pengetahuan Moral • Geografi or Sejarah b. Pass with at *least credit* (Grade C) in English at SPM level or equivalent. c. Passed the test and interview conducted by the University.

13. Programme Educational objectives:

A graduate of this programme should be able to:

- Demonstrate semi-professional competencies such as the technical skill and appropriate methodologies by applying knowledge in architecture area.
- Assist in solving technical problems in architecture field creatively and able to work in multidisciplinary teams.
- Further studies at higher level and self-development as a professional.
- Involve in activities by the community, professional organizations and make contributions towards society.

14. Programme Learning Outcomes (PO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PO1 Ability to apply knowledge of architectural design and technology.	Demonstrate creativity in application of basic design theories, techniques and principles of architectural knowledge as well as humanity in forming semi-	Lectures, tutorials, seminars, studio works, directed reading, independent research, team working, critique	Examinations, tests, quizzes, group and individual projects and/or assignments, seminars, presentations.

	professional architect. [C3]	sessions, problem-based learning.	
PO2 Ability to use tools, skills and techniques.	Demonstrate technical skills and understanding of the design process and methodologies using advanced design tools. [P4]	Lectures, tutorials, studio and lab works, critique sessions, problem-based learning.	Group and individual projects and/or assignments, presentations.
(b) Generic Skills			
Programme Learning Outcomes (PO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PO3 Critical Thinking and Problem Solving	Identify and analyze problems related to architecture and propose alternative solutions by integrating knowledge of architectural design and technology.[P3, CTPS3]	Lectures, tutorials, studio works, critique sessions, problem-based learning.	Examinations, tests, quizzes, group and individual projects and/or assignments, seminars, presentations.
PO4 Communication Skill	Communicate clearly, effectively and confidently in verbal, written and graphic forms using media which appropriate to targeted group. [P3, CS3]	Studio work, critique sessions, seminars, discussions.	Group and individual projects and/or assignments, reports, presentations.
PO5 Team working	React and adapt readily to people of different background in achieving a common goal. [A3, TS3]	Studio and lab works, critique sessions, seminars.	Group projects and/or assignments, presentations.
PO6 Life-long Learning	Sustain life-long learning independently in the acquisition of allied and advanced knowledge and skills. [A3, LL2]	Tutorials, seminars, studio works, directed reading, independent research, critique sessions.	Group and individual projects and/or assignments, reports, logs/diaries.
PO7 Entrepreneurship	Identify business types and opportunities. [P3, KK1]	Lectures, studio and lab works, directed reading, independent research.	Group and individual projects and/or assignments, reports.
PO8 Ethics	Demonstrate high motivation and practice ethical values. [A3, EM2]	Studio works, seminars, discussions, problem-	Group and individual projects and/or assignments, reports,

		based learning.	presentations, logs/diaries, attendance/ participation.
PO9 Leadership	Demonstrate leadership skills [A3, LS2]	Studio works, seminars, discussions, independent research.	Group projects and/or assignments, presentations.
15. Total credit hours to graduate		94 credit hours	

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)

- Lecture-based Courses:
  Final Examination (not less than 40%)
  Course work
- Skill-based Courses:
  100% Course work
- Studio Courses:
  100% Projects

As a pre-requisite to the next level of studio courses, students should obtain minimum grade of C in Studio courses.

Award requirements:
To graduate, a student should obtain a total of 94 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 DEGREE++ Programme
Attending short courses organised by UTM*E*, Pertubuhan Arkitek Malaysia (PAM) and Lembaga Arkitek Malaysia (LAM).
20. Facilities Available
a. Studio b. Computer and CAD Laboratory c. Workshops (Concrete, Timber and Steel) d. Gallery

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
ULAB 1032	Introductory Academic English	2
UHAB 1172	Malaysia Dynamics	2
DDWR 1116	Fundamental Design 1	6
DDWR 1213	Architectural Communication	3
DDWR 1513	Architectural History & Theory	3
TOTAL		**16**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
ULAB 1042	Intermediate Academic English	2
UICD 1032	Science, Technology and Mankind	2
DDWR 1126	Fundamental Design 2	6
DDWR 1212	Basic Architectural Computing	3
DDWR 1413	Environmental Physics & Sustainability	3
DDWR 1523	Theory of Design	3
TOTAL		**18**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULAB 2222	Communication Skills	2
DDWR 2138	Design 1	8
DDWR 2222	Architectural Computing 2	2
DDWR 2313	Structure & Construction	3
DDWR 2533	Architectural Heritage of Malaysia	3
TOTAL		**18**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
UKQX 2XX2	Co-Curriculum Service Learning	2
DDWR 2148	Design 2	8
DDWR 2323	Construction Practice	3
DDWR 2412	Building Services	2
DDWR 2611	Architectural Competition	1
TOTAL		**16**

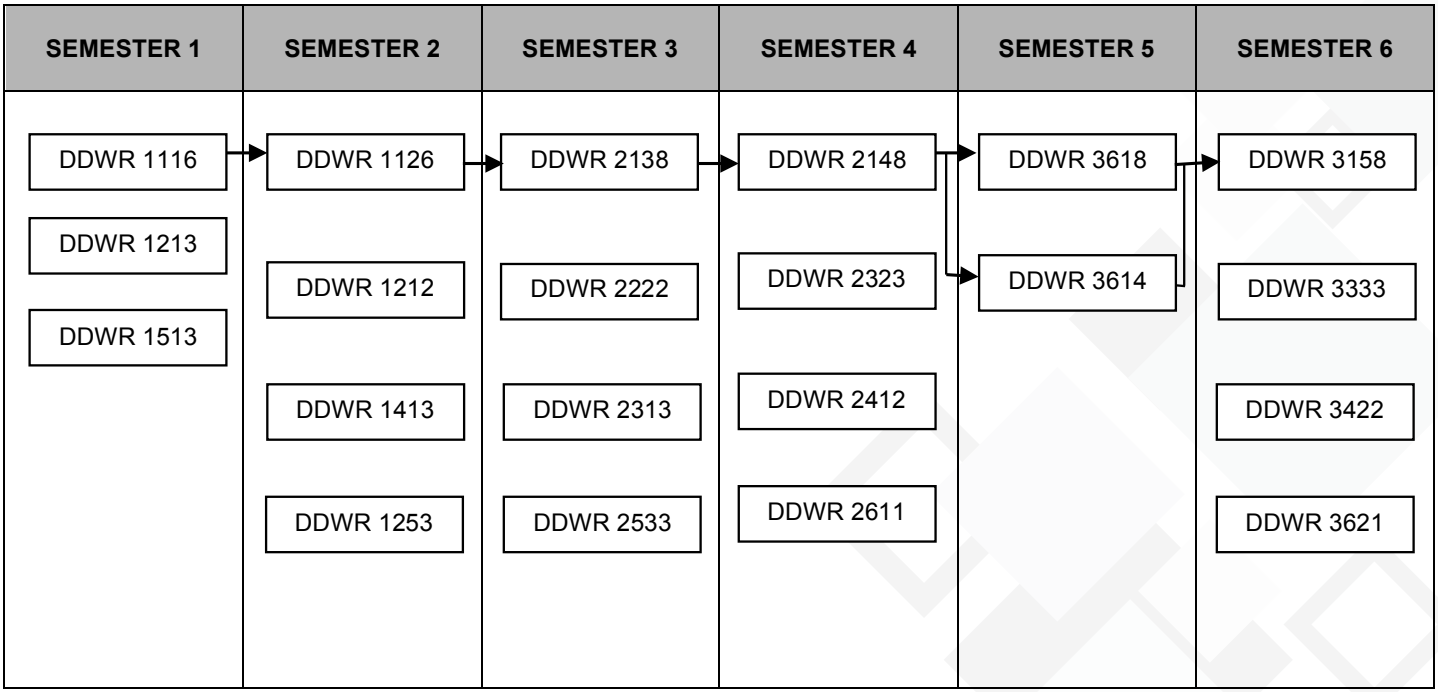
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWR 3618	Industrial Training	8
DDWR 3614	Industrial Training Report	4
TOTAL		**12**

YEAR 3 (SEMESTER 6)

Code	Course	Credit
DDWR 3158	Design 3	8
DDWR 3333	Structure & Construction 2	3
DDWR 3422	Building Services 2	2
DDWR 3621	Architectural Leadership	1
TOTAL		**14**
	TOTAL CREDITS :	**94**

PRE-REQUISITE
DIPLOMA IN ARCHITECTURE



SYNOPSIS OF CORE COURSES

DIPLOMA IN ARCHITECTURE

DDWR 1116 : Fundamental Design 1

This course presents developmental approach to fundamental skill architectural training on the elements and principles of design through series of design projects introduces to heighten the awareness, the reactions and the perceptions towards the relationship of man & environment. The course features extensive use of process co-operative learning tools through group as well as individual projects, such as graphical communications, anthropometrics; and experimentations in two and three dimensional composition, colour, geometry, texture and form of structures. This stage also includes art/graphic appreciation, elements of design, and principles of design, architectural graphics and rendering techniques sketching, model making and draw free hand with conventional tools.

DDWR 1126 : Fundamental Design 2
(Pre-requisite DDWR 1116 - minimum grade C)

The student undergo a series of projects to further heighten and exploring architecture and their ability to synthesize various design basic from to be able to design more complex parameters of architecture beginning with simple open structure to small enclosure emphasizing on ergonomics and anthropometrics. Several short projects cover the essential parameters to explore: construction & materiality; site and environmental response; user needs and form identity. Learning includes building workshop, site testing, material experiment; structural, site, environmental analysis; construction form expression, site design response, client response, design process, design documentation and architectural illustration. Equally emphasized is the building up of skills in technical presentation as well as creative visual images. This course strategizes the conventional free-hand skills with minimum computer aided design/images.

DDWR 2138 : Design 1
(Pre-requisite DDWR 1126 - minimum grade C)

Designing domestic scaled buildings incorporating concepts of basic spatial layouts, structure, building construction, and aesthetics. Emphasis on architectural vocabulary. One small timber project is designed to be progress to a series of constructional drawing as an initial introduction to working drawing.

DDWR 2148 : Design 2

(Pre-requisite DDWR 2138 - minimum grade C)

Designing a public building in a rural setting requires understanding the various aspects of communal social considerations and the ancillary requirements. A medium span structural exercise is inserted in the project Whilst considering all building design aspects and requirements, site planning factors will also be emphasized. Students need to show sensitivity to social issues, environmental and contextual issues.

DDWR 3158 : Design 3

(Pre-requisite DDWR 3618 & DDWR 3614- minimum grade C)

The main intention of second year second semester design course is to develop the students' ability to become a 'Translator' designer within environmental design paradigm. The intelligent design process will include alternative design process (environmental), analytical thinking, site/space planning, concept, ideation, working model, design synthesis and Communicating architecture. The feasibility study will include client-user analysis, program analysis, site analysis and case studies. The design inquiries will include objectives, identity, values, aspiration, behavioural, communal, structure, construction, space planning, site planning, space-form, space-making, place-making, Building regulations and building By law. Towards the end of the course the student will have the ability to design a medium low complexity building for a small group of user with urban context

DDWR 1213 : 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 techniques skills, architectural graphics skills, photography, verbal presentation, model making and story-board. The goal of these series is to provide students with generalized skills and structured knowledge. The first part of these series covered issues related to manual techniques in presentation i.e. dry and wet technique, architectural graphics such as drawing presentations and draughtsman ship. The second part covered the basic two-dimensional representation, i.e., photography and 2D and 3D model making. The third part of the series focuses on the issues related to applying the techniques into painting or story board, i.e., painting, model making and making story board such as comics.

DDWR 1212 : Basic Architectural Computing

This course provides a theoretical basic and intermediate computer graphic, visualization and digital 2-dimensional printing in architectural design, and an opportunity to develop skills through intensive practical work. Student will learn the basic and intermediate commands related to presentation, visualization and digital printing and will use PowerPoint, Photoshop, Illustrator and 2-d printing software's. The primary goal of this class is to nurture and develop students' ability to use computer presentation, visualization and printing application to explore ideas and present design concepts electronically. Student who completes this course will have a basic knowledge of various computer presentation, visualization and digital 2-d printing tools and techniques that can be used in architectural design and sufficient practical skills that can be immediately applied in studio and other works

DDWR 2222 : Architectural Computing 2

This course provides a theoretical basic and intermediate computer drafting, modeling, visualization and 3-dimensional printing in architectural design, and an opportunity to develop skills through intensive practical work. Student will learn the basic and intermediate commands related to 2D drafting, 3D modeling and rendering and will use AutoCAD, Sketch-up Pro, rendering and 3-d printing software's. The primary goal of this class is to nurture and develop students' ability to use computer drafting, modeling, rendering and printing application to explore ideas, analyze spatial data, and present design concepts electronically. Student who completes this course will have a basic knowledge of various computer modeling and rendering tools and techniques that can be used in architectural design and sufficient practical skills that can be immediately applied in studio and other works.

DDWR 2313 : Structure & Construction

This course divided by two module; building construction & structure. Basic fundamental issues of development of building construction, basic components of building construction and case studies on different type of building construction in providing a basic understanding on the different technique /method of building construction. The next topic of the course seeks to develop students' analytical and critical skills through both mathematical and visual investigation of structures, towards the objective of being able to learn about structure through informed observation, and to manipulate structure in design to enhance architectural intent.

DDWR 2323 : Construction Practice

This programme is intended to expose students with a hands-on approach in building tradesmen. Students are made aware of the basic practices in the building industry especially on brick, timber and metal works. This programme has two modules, i.e., practices in workshops and field survey works

DDWR 3333 : Structure & Construction 2

This course is about the construction technologies involved development of building structures and construction methods. This course deals with building construction based on four key materials namely, timber, steel, concrete, masonry and other composite to provide the students with basic knowledge of these materials and their applications in architectural medium span (6-12m) and medium rise design projects. Their various applications in different configurations of building components are expounded in the course. Theory of structure and concept of beam, column, floors and trusses will also being emphasized. Designing structural systems by using wood, concrete and steel is also included in this course. The lecture will be given based on the aspect of construction theory and application. To ease the training, the lectures are divided into two modules namely, Section 1: Timber and Steel, and Section 2: Bricks and Concrete.

DDWR 1413 : Environmental Physics & Sustainability

The course will focus on improving the awareness of the complexity of the environmental issues related to climate, solar heat, ventilation, natural lighting and sound on built environment. Understanding various climates with particular focus to the tropical region. Introduction to basic passive climatic design principles. Learn from primitive solution towards achieving thermal comfort. Exposure to contemporary sustainable architecture solution. Major topics include climate, thermal comfort, comfort indexes, natural ventilation, heat from sun, sun factors and orientation, problems and potential of solar radiation and example of good design solutions using selected case studies.

DDWR 2412 : Building Services

The subject is for students to understand the basic principles and techniques of building services. It covers the basic functions and purpose of building services components. Building services is one of the important aspects that need to be considered in the process of planning for developments and designing buildings. It takes about 30% of building's cost and therefore has to be planned carefully to ensure buildings can be operated efficiently during the post-construction. Students will be working individually and in groups assignments to achieve the learning outcomes.

DDWR 3422 : 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; such as water supply, mechanical ventilation, air-conditioning, fire safety, security, rubbish disposal, sewerage treatment, lifts, and escalators. , as well as security systems for the above building.

DDWR 1513 : Architectural History & Theory

The main objective of the course is to create awareness of the many kinds of Architectural theories and language of world architecture. The course provides an overview of history of architecture in the world involving the Western and Eastern civilization; from classical to Modern times; with some understanding of the social and cultural values, political traditions, technological advancement, economic achievements as well as the environment that influence the buildings and landscape.

DDWR 1523 : Theory of Design

Design is viewed as the core discipline of architectural practice. The course is an introduction to various essential knowledge and method of design within architecture and urban design context. It will cover the process and related parameters such as processes, methods and knowledge on planning, design creativity, space, form and place making; behavioural, culture, sustainability.

DDWR 2533 : 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 and later they will be spending time in the studio to produce a complete documentation.

DDWR 2611 : Architectural 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 test their ability to compete and win design or architectural 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 confident. The competition also provides the platform for students to design project outside their local environment

DDWR 3621 : Architectural Leadership

In this programme, students are doing projects in group and are required to carry-out certain tasks or assignments given by the lecturer. Some of the assignments that have been given to students are such as designing small publication works, Design Folio and Compilation of Best Students' Works including the one that had won competition both nationally and internationally.

DDWR 3618 : Industrial Training
(Pre-requisite DDWR 2148 - minimum grade C)

This course exposes the students to architectural practice and procedures. Students will be attached to an architectural firms or government departments for a period of 20 weeks. At the end of the practical training, students should be able to demonstrate the application of techniques, skills and tools in architectural practices professionally and ethically. 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.

DDWR 3614 : Industrial Training Report (Pre-requisite DDWR 2148 - minimum grade C)

This course introduces students to the building industry, parties involved, and its' relationship with architectural practice. It also covers aspects of professional core services of the architect practice in general. The students are exposed to relevant communication skills from design to practice and from practice to all relevant parties in the building industry during their practical training. Elements of Building Project Managements such as culture, technologies, politic and financial as well as the methodologies involve in Project Management and Construction Management will be discussed. Students will also be exposed to the type and variation of practices and the different structures of architectural practices. Local governments/ Authority involved in Project Management and their role, Uniform Building By-Law and other By-laws related to the Building Industry and the Architectural Professional Practice will also be introduced. These elements in Architectural Management & Practice are to be prepared in a comprehensive report towards the end of semester.

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			Ministry of Higher Education Malaysia	
6. Code of Programme			T2310	
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 : (3 Years) Maximum : (4 ½ Years) Part Time Minimum : (3 ½ 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	7	14	15
Short	0	3	0	9
12. Entry Requirement			i. General University Requirements Obtain Sijil Pelajaran Malaysia (SPM) or equivalent with at least Five (5) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements a. Fulfill the General University Requirementsand passed with credits (Grade C) in • Mathematics AND THREE (3) from the following subjects: • Physics • Additional Mathematics • Lukisan Kejuruteraan	

	• Teknologi Binaan Bangunan atau Pengajian Kejuruteraan Awam • Geografi • Sejarah • Chemistry • Information and Comunication Technology or Rekacipta b. Passed with at least credit Grade C in English at SPM/equivalent. c. Not handicapped to carry out field and laboratory works.

13. Programme objectives:

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

i. Apply modern land survey tools and techniques to solve land survey related problems and to work in multi-disciplinary teams in proposing alternative solutions.
ii. Demonstrate an effective and efficient land survey profession through innovative and initiatives attitude.
iii. Involve in community activities or professional organizations or make contributions towards society.
iv. Further studies for higher education and self-development as professional.

14. Programme Learning Outcomes (PLO)

(a) Technical Knowledge and Competencies

Programme Learning Outcomes (PLO)	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PLO1 **Ability to apply knowledge of mathematics, science, humanities general knowledge and engineering**	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 a technical assistant.	Lectures, tutorials, field and laboratory works, seminars, directed reading, problem based and cooperative learning.	Examinations, field and laboratory reports, seminar presentations, assignments, quiz, group project reports.

	[C3]		
PLO2 **Ability to apply skills in using science and land surveying tools**	Ability to plan and conduct survey and mapping works using the most appropriate modern land survey tools and techniques to solve land survey and related problems.[P4]	Lectures, tutorials, computer classes, drawing exercises, field and laboratory works.	Examinations, laboratory reports, presentations, discussions, skills demonstration, problem based exercises, group projects.
(b) Generic Skills			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 **Critical Thinking and Problem Solving**	Identify, analyse and interpret geo-spatial data for specific purposes. [P3, CTPS3]	Lectures, tutorials, laboratory works, directed reading, problem based learning.	Problem based project, laboratory reports, and field project.
PLO4 **Communication Skill**	Communicate effectively and use information and communication (ICT) technology aptly [P3, CS3]	Lectures, tutorials, group projects and fieldwork.	Written assignments, field and laboratory reports, oral presentations and skills demonstration.
PLO5 **Team Working**	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Tutorials, field and laboratory works and group assignments, peer evaluation, self-evaluation.	Group report, peer evaluation, self-evaluation.
PLO6 **Lifelong Learning**	Able to learn independently to acquire new knowledge, concepts and technology in land survey. [A3, LL2]	Tutorials, laboratory and field works, group assignments, individual projects, site visit.	Project report, seminar presentation, and site visit report.
PLO7 **Entrepreneurship**	Identify business opportunity [P3, KK1]	Individual projects	Report / Presentation
PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values	Individual projects. Directed reading.	Project report

	[A3, EM2]		
PLO9 **Leadership**	Able to demonstrate basic knowledge of leadership. [A3, LS2]	Group Project, Seminar	Project report.
15. Total credit hours to graduate		**90 credit hours**	

16. Programme Structures and features, curriculum and award requirement

The programme is offered in full time mode and based on a 2 Semester Academic Sessionwith several subjects being delivered and assessed in each Semester.

"Students will undergo practical training for one weeks known as Survey Camp programme (DDWL 3511) during Short Semester period and have to attend Industrial training for one Semester"

Assessment : refer to UTM's Academic Regulation

- Lecture-based Courses
  Final Examination (not more than 50%)
  Course work
- Skill-based Courses:
  100% course work
- Lab incorporated Courses:
  Final examination (not more than 50%)

Award requirements:
Students should attain the following:

- 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.

18. Career Prospects and Career Paths

Graduates of the program can work as:

a) Technical assistant
b) Continue for degree

Diploma holders in Land Surveying can work as a technical assistant and may also continue for degree and professional courses to qualify as a Land Licensed Surveyor.

19. UTM Degree ++ 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:

a. Plan Drawing Studio
b. Data Processing Laboratory
c. Photogrammetry and Cartography Laboratory.
d. Surveying Laboratory.

List of other special facilities/equipments:

a. Total Station
b. Optical Theodolite
c. Level
d. Digital Level
e. Global Positioning System (GPS)
f. Ground Penetrate Radar (GPR)
g. Telescope
h. Arc GIS
i. SDRMAP
j. CDS
k. ERDAS
l. AutoCAD

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
UICD 1032	Science, Technology and Mankind	2
ULAB 1032	Introductory Academic English	2
DDWS 1132	Mathematic for Surveyor 1	2
DDWS 1713	Physics	3
DDWL 1103	Basic Surveying	3
DDWL 1122	Introduction to Geomatic	2
DDWL 1612	Computer Aided Design for Surveyors	2
TOTAL		**16**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UHAS 1172	Malaysia Dynamic	2
ULAB 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**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
UKQx 2**2	Co-Curriculum Service Learning	2
DDWS 2043	Mathematic for Surveyor 3	3
DDWL 2154	Engineering Survey Technology	4
DDWL 2623	Computer Programming	3
DDWL 2214	Cadastral Survey	4
TOTAL		**16**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
ULAB 2222	Communication Skills	2
DDWL 2323	Geographical Information System	3
DDWL 2633	Survey Adjustment	3
DDWL 2453	Satellite Positioning	3
DDWL 2363	Utility Survey	3
DDWL 2312	Cartography	2
TOTAL		**16**

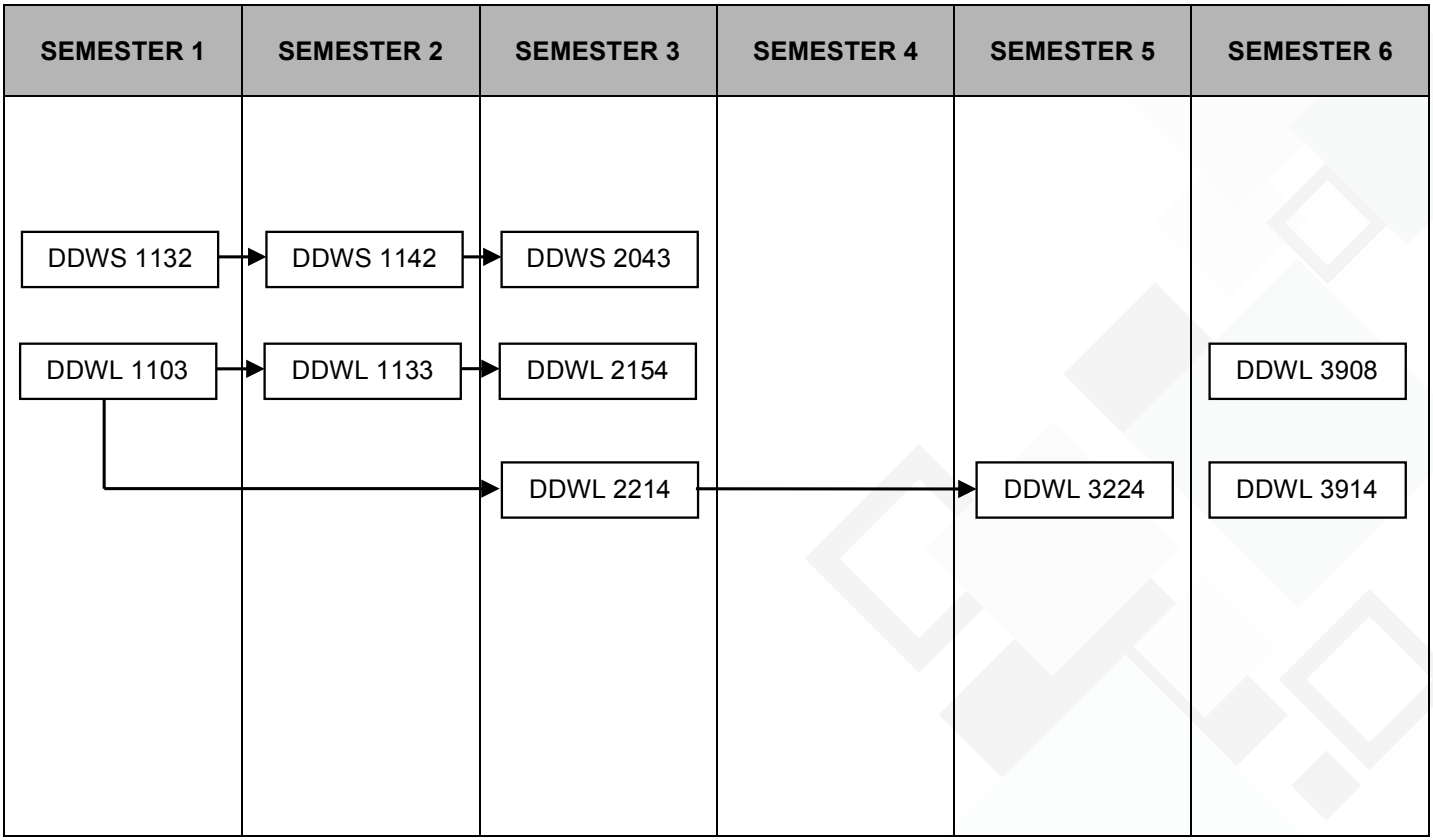
YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWL 3224	Cadastral Practice	4
DDWL 3143	Hydrographic Surveying	3
DDWL 3333	Photogrammetry	3
DDWL 3232	Land Administration	2
DDWL 3342	Remote Sensing	2
DDWL 3511	Survey Camp	1
TOTAL		**15**

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 emphasis 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.

DDWL 1122: Introduction to Geomatic

This course covers the fundamental knowledge of Geomatic engineering and equips students with both theoretical for wider exposure and better understanding of the subject matters. With this, students can get a wider imagination and view of the activities in geomatic fields that includes integrating the acquisition, processing, analysis, display and management of spatial information. Basic introduction includes traditional 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.

DDWL 1133: Engineering Surveying
(Pre-requisite DDWL 1103)

This course presents the principles of engineering surveys. In particular, it emphasises on fundamental aspects which include theodolite traversing, levelling, detail surveys, horizontal curve, transition curve, vertical curve, mass-haul diagram and setting-out. 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 solar and star observation: azimuth, latitude, longitude of control stations used in cadastral surveying, geodesy and falak syarie (Islamic astronomy).sphere, its geometry, astronomical triangle and basic equations of the sphere triangle. The student will also be exposed to the types of instrument and the coordinates system. Time: solar and sidereal day, mean solar time, apparent solar time.

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 datums (local and global datums), 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.

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.

DDWL 2154: Engineering Surveying Technology
(Pre-requisite DDWL 1133)

This course presents the surveying technology instruments which include precise levels, high-precision theodolites, 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.

DDWL 2312: Cartography

This subject 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 are generalisation, the principle, procedures, and data transformation. In this subject, they will also explained the types of map, map element, topographical and thematic maps, charts, plans, large and small scale maps.

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.

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 askeyboard, the use of loop, and print on the screen of file shape. The course will also provide problem solving exercises such as problem identification, designing of solution, translate the solution to programming language.

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**.**

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.

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.

DDWL 2363: Utility Survey

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.

DDWL 3224: Cadastral Practice

(Pre-requisite DDWL 2214)

Land Survey according to National land Code. Title ownership.Survey for reservation.Party wall survey.Subdivision.Partition.Amalgamation.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 cadastre. Issues and future trend in cadastral survey.

DDWL 3143 : Hidrographic 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.

DDWL 3333: 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 stereoplotter.Orientation.Rectification.Orthophotographs.Introduction to digital photogrammetry.

DDWL 3232: 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.Cadastral 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

DDWL 3342 :Remote Sensing

This course presents the principles of remote sensing. In particular, it emphasises on 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 in geosciences. The course features extensive use of process simulation tools through group as well as individual project works.

DDWL 3511: Survey Camp

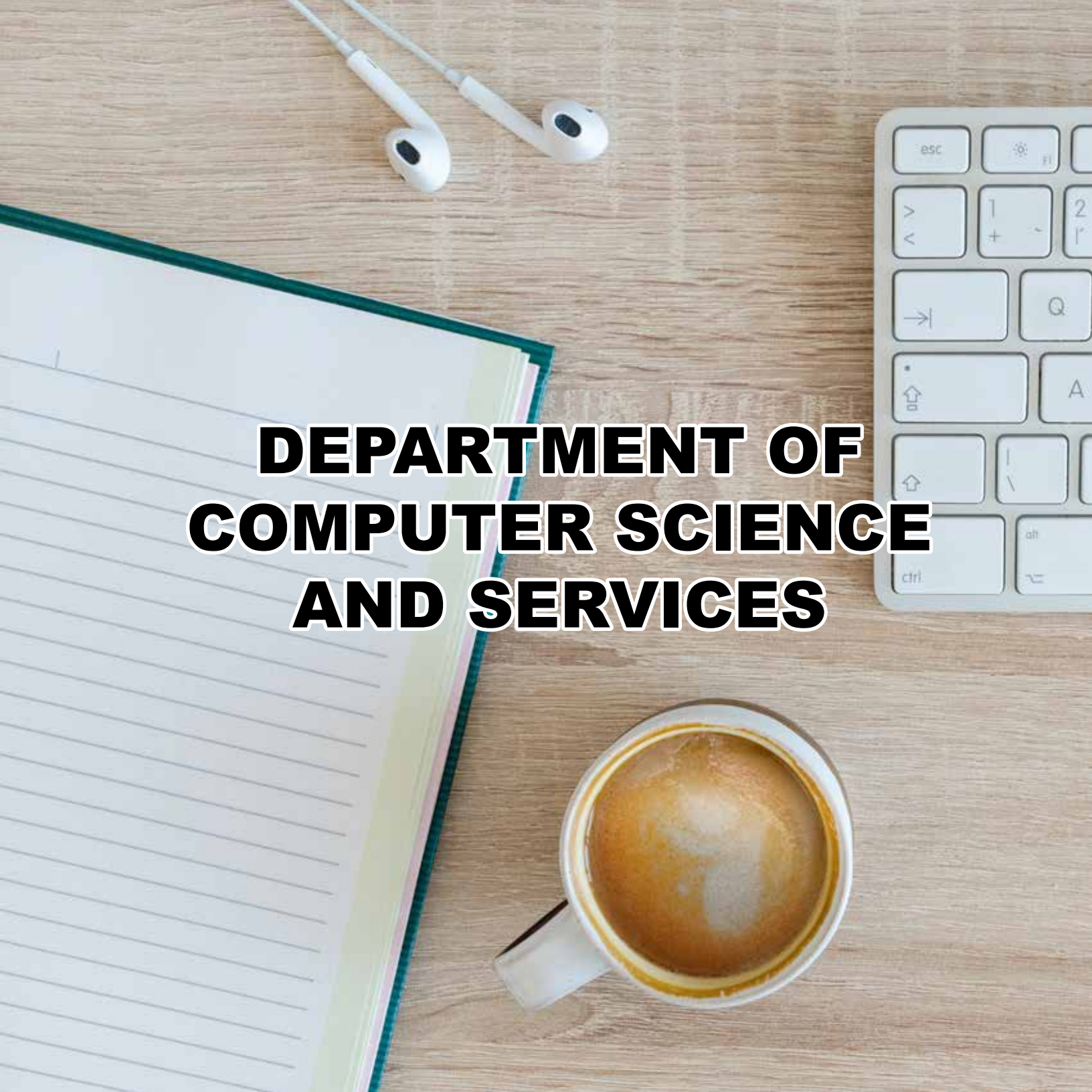
The objective of this survey camp is to train student in the main aspect of land survey profession. This includes Engineering Surveying, Cadastral Surveying and Hydrographic Surveying. Engineering survey covers EDM traversing, ordinary levelling, precise levelling and detail surveys. Students are required to fulfil the standard procedures and regulations as applied by the private survey firms. Cadastral surveyinvolves 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.

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 share experiences to the others.


DEPARTMENT OF
COMPUTER SCIENCE
AND SERVICES

PROGRAMME SPECIFICATIONS

1. Programme Name	Diploma in Computer Science (Information Technology)
2. Final Award	Diploma in Computer Science (Information Technology)
3. Awarding Institution	UTM
4. Teaching Institution	UTM
5. Professional or Statutory Body of Accreditation	Ministry of Higher Education
6. Code of Programme	T2811
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 : 6 Semester (3 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	-	9

12. Entry Requirement	i. General University Requirements Obtain Sijil Pelajaran Malaysia (SPM) / equivalent with at least six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements a. Fulfill the General University Requirements and passed with credits (Grade C) in • Mathematics AND THREE (3) from the following subjects: • Additional Mathematics • Information and Communication Technology or Fundamental of Programming or Programming and Development Tools

	• Computer Support System or Network Support System • Animation and Publication Design or Creative Multimedia Production or Computer Graphics or Reka Cipta • Physics • Chemistry • Additional Science or Science or Biology • Prinsip Perakaunan or Perdagangan atau Ekonomi Asas • Lukisan Kejuruteraan • Teknologi Kejuruteraan or Pengajian Kejuruteraan Mekanikal • Sejarah • Geografi • Pendidikan Islam or Pendidikan Syariah Islamiah or Tasawwur Islam or Pendidikan Al-Quran & As-Sunnah or Pendidikan Moral or Bahasa Arab Tinggi AND Pass with at least credit (Grade C) in English at SPM level / equivalent.

13. Programme Objectives

Graduates of this program should be able to:

- Demonstrate semi professional competencies in programming, software design and development by applying knowledge in computer science and Information Technology (IT) areas.
- Solve technical problems in computer science and IT fields and able to work in multidisciplinary teams.
- Involve in community activities, professional organizations and contribute towards society.
- Continue studies at higher level and self development as a professional.

14. Programme Learning Outcomes (PLO)			
(a) Technical Knowledge and Competencies			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO1 Ability to demonstrate and apply knowledge of computer science, information technology and mathematics	Demonstrate and apply knowledge of computer science, information technology, mathematics and humanities in the development as an IT semi-professional or IT entrepreneur [C3]	Lectures, tutorials, laboratory work, directed reading, internet searching, active, cooperative and problem based learning, Independent and group project.	Tests, Quizzes, Examinations, Assignments, Presentation, and Industrial Training Report.
PLO2 Ability to use tools, skills and techniques for computing practice	Demonstrate computing practical skills in computer hardware management, algorithm, programming, software design and development using current technologies. [P4]	Laboratory work, project and group projects.	Laboratory Reports, Assignments, In Lab Test, Project Report, Industrial Training and Industrial Training Report.
(b) Generic Skills			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 Critical Thinking and Problem Solving	Identify and solve problems related to computer science and IT as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, case studies, problem based learning.	Examinations, Tests, Project Report and Presentation, Industrial Training and Industrial Training Report.
PLO4 Communication Skill	Communicate clearly and effectively in oral and/or written forms. [P3, CS4]	Individual assignments and group projects	Project Or Assignment Reports, Peer Evaluations and Presentations, Industrial Training and Industrial Training Report.

PLO5 **Team Working**	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Individual assignments, group projects, cooperative learning and discussion.	Project Or Assignment Reports, Peer evaluations, Presentation, and Industrial Training.
PLO6 **Lifelong Learning**	Acquire and manage relevant information from various sources as well as accept new ideas. [A3, LL2]	Individual and group projects, directed reading, cooperative learning and discussion.	Project and Assignment Reports, Industrial Training and Industrial Training Report.
PLO7 **Entrepreneurship**	Recognize and identify business types and opportunities.[P3, KK1]	Group projects, directed reading, internet searching, lectures, active and cooperative learning.	Project or Assignment Reports.
PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Individual assignments, group projects and laboratory works.	Project or Assignment Reports and Industrial Training
PLO9 **Leadership**	Demonstrate leadership quality. [A3, LS2]	Group projects and laboratory works.	Project or Assignment Reports.
15. Total credit hours to graduate		**90 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 courses being delivered and assessed in each semester.

Assessment:
Courses:
- 50% Coursework
- 50% 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 minimum CPA of 2.00 inclusive of industrial training (12 credit hours). Course code: DDWC 3908 & DDWC 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, 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 can work as a programmer, software developer, IT officer, web developer, technical support staff, IT entrepreneur and any related jobs in the IT 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 Degree ++ 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. CICT Laboratory
c. Information Technology Laboratory
d. Communication Laboratory
e. Microcomputer Laboratory
f. Multimedia Laboratory
g. Computer Maintenance Laboratory
h. Language Laboratory

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
UHAS 1172	Malaysia Dynamic	2
ULAB 1032	Introductory Academic English	2
DDWC 1243	Digital Logic	3
DDWC 1683	Introduction to Computer Science	3
DDWC 1573	Programming Fundamental	3
DDWS 1013	Mathematics for Computer Science	3
TOTAL		16

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UICD 1032	Science Technology and Mankind	2
ULAB 1042	Intermediate Academic English	2
DDWC 1693	Discrete Mathematics	3
DDWC 1223	Computer Organization and Assembly Language	3
DDWC 1673	Data Communications and Networking	3
DDWC 1603	C++ Programming	3
TOTAL		16

YEAR 2 (SEMESTER 3)

Code	Course	Credit
ULAB 2222	Communication Skills	2
DDWC 2663	Operating Systems	3
DDWC 2733	Data Structures and Algorithms	3
DDWC 2623	Object Oriented Programming Using Java	3
DDWC 2453	Systems Analysis and Design Methods	3
DDWS 1313	Statistics	3
TOTAL		17

YEAR 2 (SEMESTER 4)

Code	Course	Credit
UKQX 2xx2	Co-curriculum Service Learning	2
DDWC 2483	Database	3
DDWC 2743	Software Engineering	3
DDWZ 2703	Web Programming	3
DDWC 2713	Mobile Programming	3
TOTAL		**14**

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWC 3343	Computer Security	3
DDWX xxx3	Elective I	3
DDWX xxx3	Elective II	3
DDWX xxx3	Elective III	3
DDWC 3333	Computer Hardware Management and Services	3
TOTAL		**15**

YEAR 3 (SEMESTER 6)

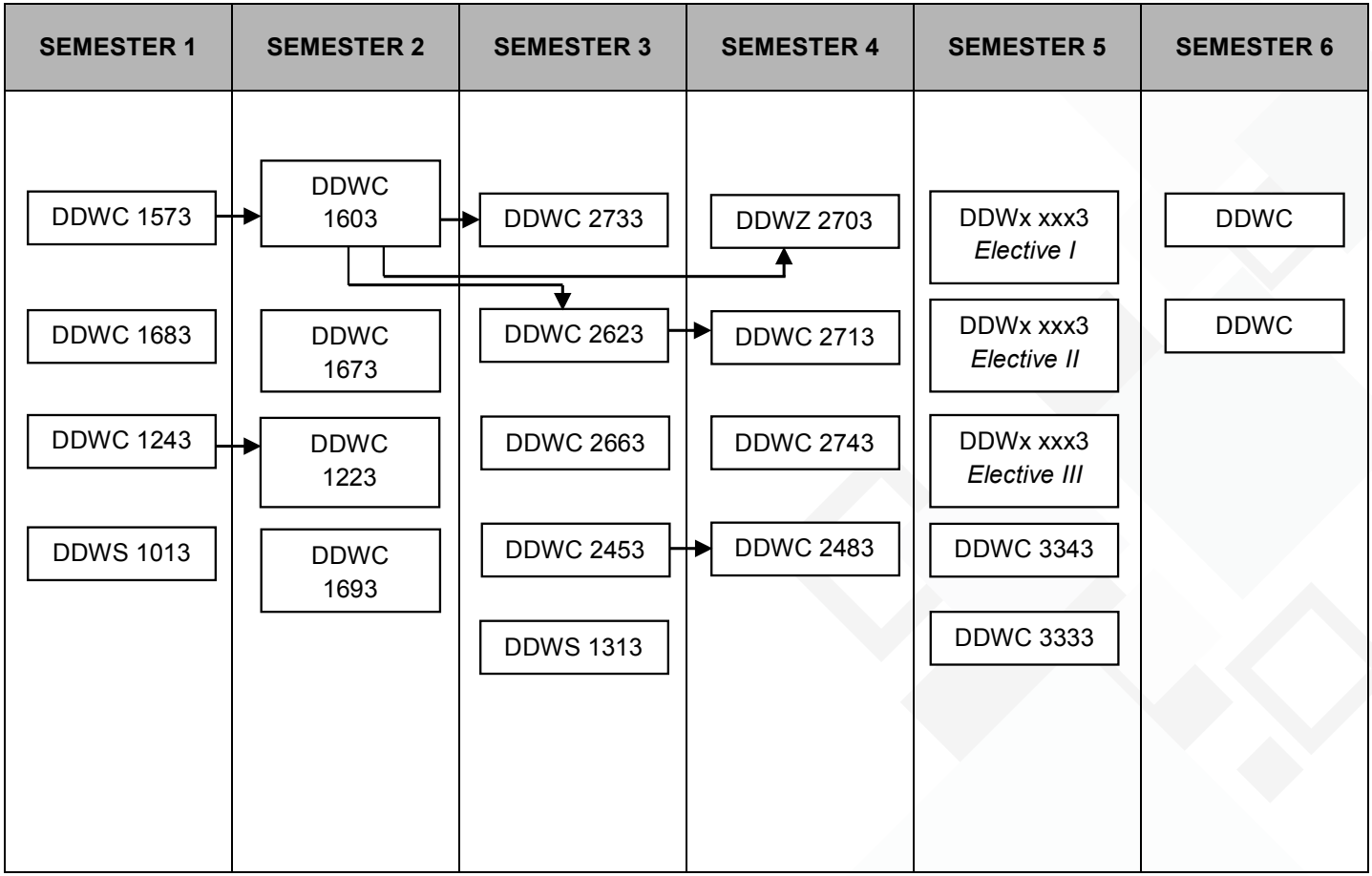
Code	Course	Credit
DDWC 3908	Industrial Training	8
DDWC 3914	Industrial Training Report	4
TOTAL		**12**
TOTAL CREDITS:		**90**

LIST OF ELECTIVE COURSES

ELECTIVE PROGRAMME (choose 3)			
Code	**Course Name**	**Credit**	**Pre requisite**
DDWC 3723	Software Development	3	DDWC 2743
DDWC 2223	System Software	3	DDWC 1223
DDWZ 2753	User Interface	3	DDWC 1603
DDWC 2653	VB.NET Programming		
DDWC 2313	Programming In Operational Research	3	DDWC 1573
DDWC 3473	Management Information System	3	DDWC 2453
DDWZ 1523	Basic Graphic Design In Multimedia	3	
DDWZ 2533	Basic Audio And Video In Multimedia	3	
DDWZ 2553	Basic Animation In Multimedia	3	
DDWZ 2543	Instructional Design Technique And Authoring Tools	3	

PRE-REQUISITE

DIPLOMA IN SCIENCE COMPUTER (INFORMATION TECHNOLOGY)



SYNOPSIS OF CORE COURSES

DIPLOMA IN SCIENCE COMPUTER (INFORMATION TECHNOLOGY)

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 includes the set or real numbers, functions and relations, solving linear equations and quadratic equations. Further topics are vectors, differentiation and integration of simple functions and their applications.

DDWS 1313 : Statistics

This course provides the students with the knowledge of basic statistics and simple probability. This course will also cover the fundamental concepts of statistics including discrete and continuous probability distributions, sampling distributions and simple test of hypothesis for one mean. Topics on simple linear regression and correlation are introduced to the students in the last chapter.

DDWC 1683 : Introduction To Computer Science

This course introduces students to computer science discipline, the history, the areas covered and the fundamental computer science. The second part of this course introduces students to problem solving methods through computer programming concept.

DDWC 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, fundamentals of logic, proof techniques, relations, functions, number theory, recurrence relations, counting methods, discrete probability theory, graph theory, trees and finite automata. At the end of the course, the students should be able to use set theory, logic, relations and functions to solve computer science problems, analyze and solve problems using number theory, recurrence relations, counting methods and discrete probability theory, apply graph theory and trees in real world problems and use deterministic finite automata finite state machines to model electronic devices, problems.

DDWC 1223 : Computer Organization and Assembly Language
(Pre-requsite DDWC 1243)

This course introduces students the concept of computer system, 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.

DDWC 1573 : Programming Fundamental

This course provides the students the basic of computer hardware, software, computer programming languages and program development method with the emphasis on C language. Topics highlighted are designing algorithm 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 constructing a C language program respectively for a given set of problems.

DDWC 1673 : 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. Discussion topics will include an overview of the various aspects of modern data and communications, and as well as the emerging technologies. 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.

DDWC 2453 : System Analysis and Design Method

Introduction to Systems Analysis and Design, Analyzing the Business Case, Requirement Modeling, Data and Process Modeling, Object-Oriented Modeling, Development Strategies, Data Design, User Interface, Input, and Output Design, System Architecture, Systems Implementation, Systems Operation, Support, and Security.

DDWC 2733 : Data Structures and Algorithms

(Pre-requisite DDWC 1603)

This course provides the students about knowledge of data structure and algorithms method or technique for solving decision making problem in the computer field using C++ programming. The techniques include list and linked lists, stacks, queues, recursions, trees, searching, graphs and sorting. This course will also emphasize the basic concept of data structure, operations of model development, algorithms or pseudo-code design, programming development and present the output.

DDWC 2483 : Database
(Pre-requisite DDWC 1603)
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.

DDWC 2663 : Operating System
This course is designed to provide students the overview of UNIX operating system. The student will also learn how to manipulate the Unix File System, UNIX Shell, Text Editors, Unix Networking, Configuring Unix Environment, and create a shell script and programming under UNIX.

SYNOPSIS OF SPECIALIZATION COURSES

DDWC 1243 : Digital Logic
This course introduces 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.

DDWC 1603 : C++ Programming
(Pre-requisite DDWC 1573)
This course provides the students about the knowledge of essential theories of programming using C++ languages. The concept of C++ programming include basic elements of C++, input/output formatting, selection statement, loops, functions, arrays, pointers, c-strings and records. This course will also emphasize the basic concept of programming, different techniques to write program in C++ languages, understanding the algorithms or pseudo-code, programming development and show the output.

DDWC 2623 : Object - Oriented Programming Using Java
(Pre-requisite DDWC 1603)
This course is designed to expose the students to the software development by covering object-oriented analysis design with the UML, and the fundamental 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 the 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 object-oriented approach. The students should also

be able to acquire and manage relevant information of build Java desktop application from various sources to accomplish an assigned project.

DDWC 2743 : Software Engineering

This course presents the fundamental software engineering processes. In particular it emphasizes on the software process model, software project management, software system requirements and requirements engineering processes, object-oriented design, user interface design, software verification and validation and software testing. A number of approaches that are geared to rapid software delivery will also be looked into.

DDWZ 2703 : Web Programming
(Pre-requisite DDWC 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 languages for business logics and data processing.

DDWC 2713 : Mobile Programming
(Pre-requisite DDWC 2623)

This project-oriented course examines the principles of mobile application design and development. Students will learn application development on the Android platform. An overview of the most common tools and techniques for writing Android applications is included. The Android approach to user interfaces is described along with a discussion of some of the more common user interface elements. Storage strategies for persistent information are also covered, including use of the available SQLite Database features.

DDWC 3333: Computer Hardware Management and Services

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 PC, basic understanding of computer lab setup and safety purposes as well as latest technology related to the course.

DDWC 3343: Computer Security

This course introduces students to some major views, theories and applications in the area of computer security and controls. Major control technique will be encryption. This course will also emphasizes on the general concepts of security involving codes and applications, operating systems, database management system, computer networking, physical controls, legal and ethical issues. Students will carry out a small scale project to investigate the current practices in the area of security and controls in the industries.

SYNOPSIS OF ELECTIVE COURSES

CHOOSE 3 ONLY

DDWC 3723: Software Development
(Pre-requisite DDWC 2743)

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 problem and design the solution. Students will construct application by synthesizing the design and generates 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 leadership, team collaboration, writing and communication.

DDWC 2223: System Software

This course introduces students the function of system software, type and category of software and example of operating system. Relationship, advantages and disadvantages of machine language and assembly language, type and format of assembly language, memory, register, operand size, instruction format and addressing mode in MC 68000, function and type of assembler, two passes of assembler, location counter, symbol table, instruction table, assembler directive table, compiler versus interpreter, structure of compiler, function of linker and loader will also examines. UNIX basic commands will also be introduced to the students. Students will carry out a small scale project to develop a mini assembler.

DDWC 2653 : VB.NET Programming

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.

DDWC 2313 : Programming In Operational Research

This course provides the students the knowledge operations research principles and techniques for solving decision making problems in the industry using mathematical models. The techniques include decision analysis, linear programming, transportation model, assignment model, network model and forecasting. This course will also emphasize the process of model development, algorithm design, computer programming development and solution analysis.

DDWZ 2753 : User Interface

This course presents the physical and informational aspects of the user interface. It emphasizes on 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.

DDWC 3473 : Management Information System

Introduction to information systems; Human and organization; Systems and model; Systems, management and decision making; Information technology concept; Types of systems; Systems functional perspective; Enterprise systems; Internet in business; Networked organization; The digital firm, e-business, e-commerce; Political, social, ethical issues; Security and control; Systems and knowledge; Redesigning and reengineering organization; Systems development; Business value and organizational changes; Global systems; End-user computing and office automation; Latest trend.

DDWZ 1523 : Basic Graphic Design in Multimedia

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 application. Student will be introduce to major graphic design application 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 application by using the graphic design drawing software such as Adobe Illustrator CS3.

DDWZ 2543 : Instructional Design Technique and Authoring Tools

This course introduces students to concepts in instructional multimedia design and development, comparison between authoring tools, cycles in instructional multimedia design, instructional strategies and how to select medias for multimedia applications usage. Concept of interactivity, input devices for interactive applications, interactive questions writing techniques and feedback characteristics. Designing an interface, component needed, adding user-friendly features and usage of color and highlighting in instructional multimedia applications. Develop a small instructional application using Macromedia Authorware.

DDWZ 2533 : Basic Audio and Video in Multimedia

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 piece of audio and video files.

DDWZ 2553 : Basic Animation In Multimedia

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. Student 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

DDWC 3908 : Industrial Training

This course exposes students to real industrial environment. Students are attached to a host organization for a minimum period of 20 weeks and undergo training relevant to the aspects of works. 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.

DDWC 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 Computer Science (Multimedia)
2. Final Award	Diploma in Computer Science (Multimedia)
3. Awarding Institution	UTM
4. Teaching Institution	UTM
5. Professional or Statutory Body of Accreditation	Ministry of Higher Education
6. Code of Programme	T2812
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 semesters (3 Years) Maximum : 9 semesters (4 ½ Years) Part Time : Minimum : 6 Semester (3 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	-	9

12. Entry Requirement	i. General University Requirements Obtain Sijil Pelajaran Malaysia (SPM) / equivalent with at least six (6) credits (Grade C) inclusive of Bahasa Melayu. ii. Special Programme Requirements a. Fulfill the General University Requirements and passed with credits (Grade C) in • Mathematics AND THREE (3) from the following subjects: • Additional Mathematics • Information and Communication Technology or Fundamental of Programming or Programming and Development Tools

	• Computer Support System or Network Support System • Animation and Publication Design or Creative Multimedia Production or Computer Graphics or Reka Cipta • Physics • Chemistry • Additional Science or Science or Biology • Prinsip Perakaunan • Perdagangan • Ekonomi Asas • Reka Cipta. • Lukisan Kejuruteraan • Teknologi Kejuruteraan or Pengajian Kejuruteraan Mekanikal • Sejarah • Geografi • Pendidikan Islam or Pendidikan Syariah Islamiah or Tasawwur Islam or Pendidikan Al-Quran & As-Sunnah or Pendidikan Moral AND b. Pass with at least credit (Grade C) in English at SPM level / equivalent.

13. Programme objectives:

Graduates of the program should be able to:

- Demonstrate semi professional competencies in programming, software design and development by applying knowledge in computer science and multimedia areas.
- Solve technical problems in computer science and IT fields and able to work in multidisciplinary teams.
- Involve in community activities, professional organizations and make contributions towards society.
- Continue studies at higher level and self development as a professional.

14. Programme Learning Outcomes (PLO)			
(a) Technical Knowledge and Competencies			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO1 Ability to apply knowledge of computer science, multimedia and mathematics	Demonstrate and apply knowledge of computer science, multimedia, mathematics and humanities in the development as an IT semi-professional or IT entrepreneur. [C3]	Lectures, tutorials, laboratory work, directed reading, internet searching, active, cooperative and problem based learning, Independent and group project.	Tests, quizzes, Examinations, Assignments, Presentation.
PLO2 Ability to use tools, skills and techniques related to computer science	Demonstrate computing practical skills in computer hardware management, algorithm, programming, software design and development using current technology and multimedia tools. [P4]	Laboratory work and group projects.	Laboratory skills, Assignments, In lab test, Project report.
(b) Generic Skills			
Programme Learning Outcomes (PLO)	**Intended Learning Outcomes**	**Teaching and Learning Methods**	**Assessment**
PLO3 Critical Thinking and Problem Solving	Identify and solve problem related to computer science and multimedia as well as propose alternative solutions. [P3, CTPS3]	Project based learning, active and cooperative learning, case studies, problem based learning.	Examinations, Tests, Project Report and Presentation, Industrial Training and Industrial Training report
PLO4 Communication Skill	Communicate clearly and effectively in oral and/or written forms. [P3, CS4]	Individual assignments and group/mini projects	Project or assignment reports, peer evaluations & Presentations.

PLO5 **Team Working**	Work collaboratively as part of a team undertaking a range of different team roles. [A3, TS3]	Individual assignments, group/mini projects, cooperative learning & discussion.	Project or assignment reports, peer evaluations, presentations and Industrial Training.
PLO6 **Lifelong Learning**	Acquire and manage relevant information from various sources as well as accept new ideas. [A3, LL2]	Individual and group projects, directed reading, cooperative learning and discussion.	Project and assignment reports, Industrial Training and Industrial Training report.
PLO7 **Entrepreneurship**	Recognize and identify business types and opportunities. [P3, KK1]	Group projects, directed reading, internet searching, lectures, active and cooperative learning.	Project or assignment reports.
PLO8 **Ethics**	Demonstrate an understanding of professional and practice ethical values. [A3, EM2]	Individual assignments, group projects and laboratory works.	Project or assignment reports.
PLO9 **Leadership**	Demonstrate leadership quality. [A3, LS2]	Group projects and laboratory works.	Project or assignment reports and Industrial Training.
15. Total credit hours to graduate		**90 credit hours**	

16. Programme structures and features, curriculum and award requirements

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

Assessment:
Courses:
50% Coursework
50% 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 minimum CPA of 2.00 inclusive of industrial training (12 credit hours). Course code: DDWZ 3908 & DDWZ 3914.

17. Our Uniqueness

This programme blends theory and practice, and real world experiences, and covers key technical knowledge in techniques of computing, 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 programme. Students will be trained not only in the technical areas of specialization 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

This program will produce graduates that can work as programmer, assistant IT officer, animator, graphic/web designer, assistant multimedia author, web developer, technical support staff, assistant database administrator, assistant system administrator, assistant network engineer, IT entrepreneur and any related jobs in the ICT industry. The graduates may also further their studies for a Bachelor of Computer Science or bachelor in any related field at local or foreign universities.

19. UTM Degree ++ Program

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

20. Facilities available

List of laboratories:

a. Linux Laboratory
b. CICT Laboratory
c. Information Technology Laboratory
d. Communication Laboratory
e. Microcomputer Laboratory
f. Multimedia Laboratory
g. Computer Maintenance Laboratory
h. Language Laboratory
i. Audio and Video Studio

CURRICULUM STRUCTURE

YEAR 1 (SEMESTER 1)

Code	Course	Credit
UICD 1032	Science, Technology and Mankind	2
ULAB 1032	Introductory Academic English	2
DDWC 1243	Digital Logic	3
DDWC 1683	Introduction to Computer Science	3
DDWC 1573	Programming Fundamental	3
DDWC 1693	Discrete Mathematics	3
TOTAL		**16**

YEAR 1 (SEMESTER 2)

Code	Course	Credit
UHAS 1172	Malaysia Dynamic	2
ULAB 1042	Intermediate Academic English	2
DDWS 1013	Mathematics for Computer Science	3
DDWC 1223	Computer Organization and Assembly Language	3
DDWZ 1523	Basic Graphic Design in Multimedia	3
DDWC 1603	C++ Programming	3
TOTAL		**16**

YEAR 2 (SEMESTER 3)

Code	Course	Credit
UKQS 2xx2	Co-Curriculum Service Learning	2
DDWZ 2753	User Interface	3
DDWC 2483	Database	3
DDWZ 2703	Web Programming	3
DDWC 2453	Systems Analysis and Design Methods	3
DDWZ 2533	Basic Audio and Video in Multimedia	3
TOTAL		**17**

YEAR 2 (SEMESTER 4)

Code	Course	Credit
ULAB 2222	Communication Skills	2
DDWC 1673	Data Communication and Networking	3
DDWC 2733	Data Structure and Algorithms	3
DDWZ 2553	Basic Animation in Multimedia	3
DDWX xxx3	Elective I	3
TOTAL		**14**

YEAR 3 (SEMESTER 5)

Code	Course	Credit
DDWS 1313	Statistics	3
DDWC 2663	Operating Systems	3
DDWX xxx3	Elective II	3
DDWX xxx3	Elective III	3
DDWZ 3563	Multimedia Application Development	3
TOTAL		**15**

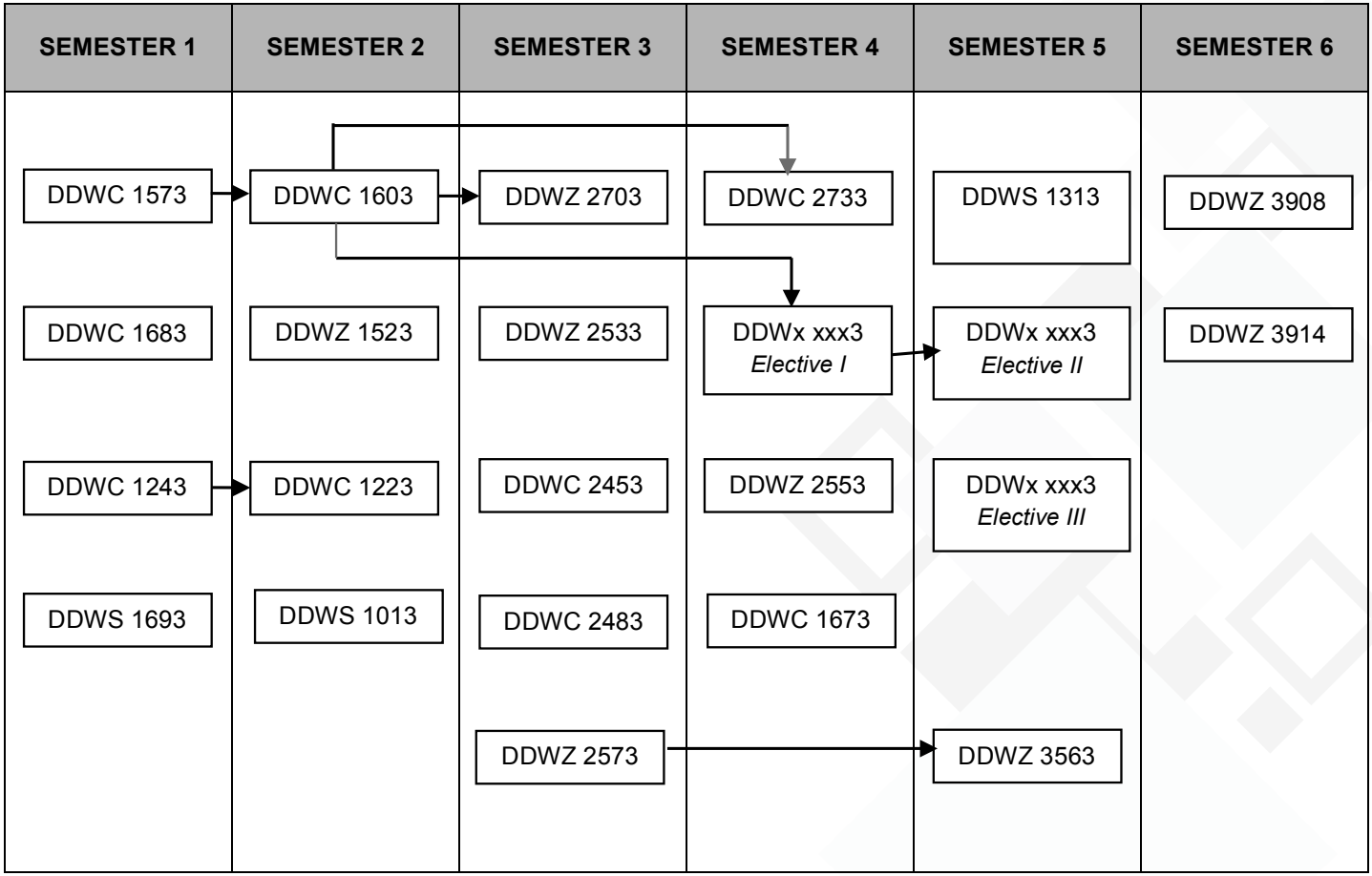
YEAR 3 (SEMESTER 6)

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

LIST OF ELECTIVE COURSES

ELECTIVE PROGRAMME (choose 3 only)		
Code	**Course Name**	**Credit**
DDWC2223	System Software	3
DDWC 3333	Computer Hardware Management and Services	3
DDWC 3473	Management Information System	3
DDWC 2653	Vb.Net Programming	3
DDWC 2743	Software Engineering	3
DDWZ2543	Instructional Design and Authoring Tools	3
DDWC 3343	Computer Security	3
DDWC 2623	Object-Oriented Programming using Java	3
DDWC 2713	Mobile Programming	3

PRE-REQUISITE
DIPLOMA IN COMPUTER SCIENCE (MULTIMEDIA)



SYNOPSIS OF CORE COURSES

DIPLOMA IN SCIENCE COMPUTER (MULTIMEDIA)

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 includes the set or real numbers, functions and relations, solving linear equations and quadratic equations. Further topics are vectors, differentiation and integration of simple functions and their applications.

DDWS 1313 : Statistics

This course provides the students with the knowledge of basic statistics and simple probability. This course will also cover the fundamental concepts of statistics including discrete and continuous probability distributions, sampling distributions and simple test of hypothesis for one mean. Topics on simple linear regression and correlation are introduced to the students in the last chapter.

DDWC 1683 : Introduction To Computer Science

This course introduces students to computer science discipline, the history, the areas covered and the fundamental computer science. The second part of this course introduces students to problem solving methods through computer programming concept.

DDWC 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, fundamentals of logic, proof techniques, relations, functions, number theory, recurrence relations, counting methods, discrete probability theory, graph theory, trees and finite automata. At the end of the course, the students should be able to use set theory, logic, relations and functions to solve computer science problems, analyze and solve problems using number theory, recurrence relations, counting methods and discrete probability theory, apply graph theory and trees in real world problems and use deterministic finite automata finite state machines to model electronic devices, problems.

DDWC 1223 : Computer Organization and Assembly Language
(Pre-requsite DDWC 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.

DDWC 1573 : Programming Fundamental

This course provides the students the basic of computer hardware, software, computer programming languages and program development method with the emphasis on C language. Topics highlighted are designing algorithm 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 constructing a C language program respectively for a given set of problems.

DDWC 1673 : 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. Discussion topics will include an overview of the various aspects of modern data and communications, and as well as the emerging technologies. 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.

DDWC 2453 : System Analysis and Design Method

Introduction to Systems Analysis and Design, Analyzing the Business Case, Requirement Modeling, Data and Process Modeling, Object-Oriented Modeling, Development Strategies, Data Design, User Interface, Input, and Output Design, System Architecture, Systems Implementation, Systems Operation, Support, and Security.

DDWC 2733 : Data Structures and Algorithms
(Pre-requisite DDWC 1603)

This course provides the students about knowledge of data structure and algorithms method or technique for solving decision making problem in the computer field using C++ programming. The techniques include list and linked lists, stacks, queues, recursions, trees, searching, graphs and sorting. This course will also emphasize the basic concept of data structure, operations of model development, algorithms or pseudo-code design, programming development and present the output.

DDWC 2483 : Database
(Pre-requisite DDWC 2453)
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.

DDWC 2663 : Operating System
This course is designed to provide students the overview of UNIX operating system. The student will also learn how to manipulate the Unix File System, UNIX Shell, Text Editors, Unix Networking, Configuring Unix Environment, and create a shell script and programming under UNIX.

SYNOPSIS OF SPECIALIZATION COURSES

DDWZ 1523: Basic Graphic Design in Multimedia
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 application. Student will be introduced to major graphic design application such as Logo/ symbols/ pictogram, Visual Identity/Branding, Poster, Book jackets and Magazine covers and Packaging design etc. This course help develop hands on skills on how to design/solve graphic design application by using the graphic design drawing software such as Adobe Illustrator CS3.

DDWZ 2753: User Interface
This course presents the physical and informational aspects of the user interface. It emphasizes on 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.

DDWZ 2533: Basic Audio and Video in Multimedia
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 piece of audio and video files.

DDWZ 2553: Basic Animation In Multimedia
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. Student 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.

DDWZ 2703: Web Programming

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 languages for business logics and data processing.

DDWZ 3563: Multimedia Application Development
(Pre-requisite DDWZ 2753)

This course introduces the techniques and tasks that will be required to use when developing multimedia projects. The techniques includes multimedia project management, scoping, proposal, pre-production, production, post production, contract issues, selecting the media and techniques, interface design, testing, packaging multimedia application & developing documentation, archiving. This course emphasizes the people and processes involved in the definition and production of a project.

DDWC 1243: Digital Logic

This course introduces 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.

DDWC 1603: C++ Programming
(Pre-requisite DDWC 1573)

This course provides the students about the knowledge of essential theories of programming using C++ languages. The concept of C++ programming include basic elements of C++, input/output formatting, selection statement, loops, functions, arrays, pointers, c-strings and records. This course will also emphasize the basic concept of programming, different techniques to write program in C++ languages, understanding the algorithms or pseudo-code, programming development and show the output.

SYNOPSIS OF ELECTIVE COURSES

(Choose 3 Only)

DDWC 2223: System Software

This course introduces students the function of system software, type and category of software and example of operating system. Relationship, advantages and disadvantages of machine language and assembly language, type and format of assembly language, memory, register, operand size, instruction format and addressing mode in MC 68000, function and type of assembler, two passes of assembler, location counter, symbol table, instruction table, assembler directive table, compiler versus interpreter, structure of compiler, function of linker and loader will also examines. UNIX basic commands will also be introduced to the students. Students will carry out a small scale project to develop a mini assembler.

DDWC 3333: Computer Hardware Management and Services

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 PC, basic understanding of computer lab setup and safety purposes as well as latest technology related to the course.

DDWC 3473: Management Information System

Introduction to information systems; Human and organization; Systems and model; Systems, management and decision making; Information technology concept; Types of systems; Systems functional perspective; Enterprise systems; Internet in business; Networked organization; The digital firm, e-business, e-commerce; Political, social, ethical issues; Security and control; Systems and knowledge; Redesigning and reengineering organization; Systems development; Business value and organizational changes; Global systems; End-user computing and office automation; Latest trend.

DDWC 2653: VB.NET

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.

DDWC 2743: Software Engineering

This course presents the fundamental software engineering processes. In particular it emphasizes on the software process model, software project management, software system requirements and requirements engineering processes,

object-oriented design, user interface design, software verification and validation and software testing. A number of approaches that are geared to rapid software delivery will also be looked into.

DDWZ 2543: Instructional Design and Authoring Tools

This course introduces students to concepts in instructional multimedia design and development, comparison between authoring tools, cycles in instructional multimedia design, instructional strategies and how to select medias for multimedia applications usage. Concept of interactivity, input devices for interactive applications, interactive questions writing techniques and feedback characteristics. Designing an interface, component needed, adding user-friendly features and usage of color and highlighting in instructional multimedia applications. Develop a small instructional application using Macromedia Authorware.

DDWC 3343: Computer Security

This course introduces students to some major views, theories and applications in the area of computer security and controls. Major control technique will be encryption. This course will also emphasises on the general concepts of security involving codes and applications, operating systems, database management system, computer networking, physical controls, legal and ethical issues. Students will carry out a small scale project to investigate the current practices in the area of security and controls in the industries.

DDWC 2623: Object-Oriented Programming Using Java
(Pre-requisite DDWC 1603)

This course is designed to expose the students to the software development by covering object-oriented analysis design with the UML, and the fundamental 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 the 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 object-oriented approach. The students should also be able to acquire and manage relevant information of build Java application from various sources to accomplish an assigned task.

DDWC 2713: Mobile Programming
(Pre-requisite DDWC 2623)

This project-oriented course examines the principles of mobile application design and development. Students will learn application development on the Android platform. An overview of the most common tools and techniques for writing Android applications is included. The Android approach to user interfaces is described along with a discussion of some of the more common user interface elements. Storage strategies for persistent information are also covered, including use of the available SQLite Database feature.

SYNOPSIS OF INDUSTRIAL TRAINING COURSES

DDWZ 3908: Industrial Training

This course exposes students to real industrial environment. Students are attached to a host organization for a minimum period of 16 weeks and undergo training relevant the aspects of works. Students are expected to apply the computing and multimedia 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.

DDWZ 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.

SYNOPSIS OF SCIENCE COURSES

DDWS 1012 : Foundation Engineering Mathematic
This course is designed to expose to the students the basic knowledge of mathematics. It emphasizes on topics on indices, surd and logarithms, different types of functions and graphs. It also provides the study on solving various types of equations and inequalities, trigonometry and also polar coordinates.

DDWS 1022 : Engineering Mathematics
(Pre-requisite: DDPS 1012)
This course emphasizes active thinking on mathematical concepts, problems and appropriate presentation of mathematical calculations. Topics include sequences and series, concept of matrices and determinants, system of linear equation, vectors and complex numbers.

DDWS 2033 : Higher Engineering Mathematics
(Pre-requisite: DDPS 1022)
The course is designed to cover six main topics which are differentiation, integration, introduction to differential equations of first order, introduction to second order linear differential equations, partial derivatives and double integration.

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 includes the set or real numbers, functions and relations, solving linear equations and quadratic equations. Further topics are vectors, differentiation and integration of simple functions and their applications.

DDWS 1132 : Mathematics for Surveyor I
This course covers algebra, conic section, trigonometry, coordinate geometry and polar coordinate.

DDWS 1132 : Mathematics for Surveyor I
This course includes matrices, vectors, systems of linear equations, differentiation and integration.

DDWS 2043 : Mathematics for Surveyor 3
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. This unit will also introduce the statistics for data organization, representation, description and analysis, including testing the hypothesis and using the least square method to determine a regression model.

DDWS 1313 : Statistics
This course provides the students with the knowledge of basic statistics and simple probability. Topics included are introduction to statistics, visual presentation in statistics and data summary, probability, discrete and continuous probability, sampling distribution, hypothesis test for one sample and simple linear regression.

DDWS 1113 : Algebra
This course covers the mathematical topics most directly related to computer science. It includes Set and Number Theories, Boolean algebra, Indices, Surd, Logarithms, Series, Functions, Polynomials and Geometry Coordinate.

DDWS 1413 : Chemistry
This course emphasizes classification of matter, atoms, molecules, ions and mol 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 several laboratory works to enhanced the theoretical aspect and the opportunities to teach through interaction with students at the bench.

DDWS 1713 : Physics
This course emphasizes on vector operations and application of Newton's Laws of motion and fundamental physics principles in various kinds of motions such as linear motion, freefall, projectile motion, uniform circular motion, satellite motion, collisions, simple harmonic motion, wave progression, electrostatic and magnetism. It also covers the definition of Newton's Laws, Hooke's Law, Ampere's and Faraday's Laws, different kinds of forces and other concepts commonly encountered in physics and engineering. The forces are friction, normal, weight, tension, electrostatic and magnetic forces. The principles to be studied are principle of conservation of total energy, total linear momentum, work-energy theorem, impulse- momentum theorem. Other related concepts to be covered include free body diagram, equilibrium and non equilibrium, inclined planes and connected bodies. A few experiments are included in the course to help enhance the theoretical aspects of the course and enable students to develop their team working skills, communication skills and report writing.

SYNOPSIS OF LANGUAGE COURSES

ULAB 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 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-access materials. At the end of the course, students should be able to apply these skills in current and future academic settings.

ULAB 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 contexts

ULAB 2222 : Communication Skills
This course is designed to enhance students' communication skills through a community-based project, where students will engage with the community and identify an issue or problem faced. This project will enhance students' listening, speaking and writing skills through several tasks outlined for the students. The tasks include writing of project outline, and oral communication activities through group discussion, consultation with lecturers and presentations. Leadership skills are also developed through the tasks given. At the end of the course students should be able to apply these communication skills and leadership qualities in their professional career.

SYNOPSIS OF UNIVERSITY COURSES

UICD 1032 : Science, Technology and Mankind
This course discusses the human and knowledge covering definitions, concepts, theories, history, and cultural knowledge. Also discuss are about the science of Islamic concepts, history, Islamic views on the studies of science, Islamic Science and methodology. Next, discussion are about technology in terms of concepts, history, science and technology in Islam, and comparison with the West, as well as solutions to the issue of technology. The scope of the discussions also include matters relating to humans in terms of concepts, theories of occurrence, process creation, status and responsibilities, the glory and the goal of its creation. Subsequent discussion focused upon the concept kosmologi, creation and end the realm according to Western science and Islam. The last aspect discussed is about the achievements of Islamic scholars in science and technology

UHAS 1172 : Malaysia Dynamic
This course covers all disciplines of social sciences which include sociology, political science, history and international relation. It provides the added values for UTM students in shaping their identity and nurturing uniti among them. It also helps to produce students who are dynamic and have global thinking.

SYNOPSIS OF CO-CURRICULUM AND SERVICE LEARNING COURSES

UKQU 2412 : Kelana Siswa
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.

UKQU 2615 : First Aid
Train and provide knowledge in doing first aid in the appropriate manner in the event of an occurrence as well as identify the cause of occurrence for survival.

UKQA 2012 : Innovation and Community
This course focuses on stimulating creative thinking and innovative to individuals and teams of students. This course encourages invention and innovation, which includes concepts, and practice centered on technological thinking.

UKQA 2022 : Digital Media and Community
This course gives exposure to the students related to basic digital media and technology as well as using specific software platform to develop resources in digital form that is useful to the community.

UKQA 2052 : Electrical Safety
This course promotes the sharing of skills, knowledge or experience between the students and the community specifically on the topic of every day electrical safety.

UKQA 2092 : Science and Community Sains dan Komuniti
This course will enable students to work with government agencies , utilities and local communities to carry out activities related to the content of science and technology in society

UKQA 2112 : 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 .

UKQA 2132 : Handicraft
This course will expose students on wax sketching using batik tools and drawing techniques, colouring (dyeing system) and setting the dye colour for batik manufacturing and methods to obtain good quality and beautiful batik pattern design.

UKQA 2162 : Photo Creative Services
This course will give exposure about photography skills in terms of theory and technical. Students will experience practical exercises.

UKQR 2012 : Leadership & Community
This course will give exposure to students about principles of leadership in managing community activities through the activities of clubs and associations.

UKQR 2022 : Budi Penyayang
This course will expose students to social programs, welfare and awareness. Students will also be taught about leadership qualities in managing a community. Students will do charity work together with senior citizens, the disabled and contributed in helping to advance the achievement of the orphans.

UKQR 2032 : Volunteerism Science
This course will expose students to basic knowledge of volunteerism science and implementation of volunteer activities as well as definitions of volunteerism, self preparation, the issue of safety and health as well as mental development and the spirit of volunteering.

UKQR 2042 : Disaster Management
This course will give exposure to students relating to the definition of disaster management, preparing themselves, the issue of safety and health, physical and mental preparations.

UKQR 2062 : Sustainable Community
This course is a community service program for three days in the village selected to be the core programme. Students will be given basic introduction to the theory of mathematics and its application in real life activities/problems.

UKQR 2072 : UTM Learning and Self-Reliance
This course is a three days community service program in the village selected to be the core programme. Students will be given basic introduction to the theory of mathematics and its application in real life activities/problems.

UKQR 2082 : Character Development and Social Ethics
This course will expose the students about the importance of ethics and protocols in everyday life . In addition , students will be taught to practice proper techniques or practices in the protocol . Students will be taught in practical , namely to deal with the real situation

UKQR 2092 : Sustainable Education in the Community
This course combines community service projects and activities related to the concept of sustainability in their everyday life which involves students in providing education and skills to apply the sustainable concepts to the community.

UKQS 2012 : Badminton
This course introduces the students the basic and correct techniques of playing badminton. They will also have the opportunity to organize a small badminton competition.

UKQS 2062 : Ping Pong
This course introduces the students about ping pong game focusing on the basics of the game, rules and laws of the game, organize and conduct a small competition

UKQS 2092 : Archery
This course emphasizes to students about the laws and regulations of the archery game. They will also be introduced to the basic skills and techniques of archery, and organize and conduct a small competition.

UKQS 2102 : 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.

UKQS 2112 : 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.

UKQS 2172 : Martial Arts
This course provides a platform to integrate knowledge about concepts and models of leadership, teamwork and the ethical development through martial arts.

UTM UNIVERSITI TEKNOLOGI MALAYSIA
School of Professional and Continuing Education (UTMSPACE)

Centre for Diploma Studies SPACE
Universiti Teknologi Malaysia
Jalan Sultan Yahya Petra, 54100 Kuala Lumpur
Tel No: 03-2615 4388 / 4357
Fax No: 03-2615 4990

http://www.ppd.utmspace.edu.my

SHAPING MINDS • BUILDING CAREERS

UTMSPACE ESTD 1993 QS ASIAN UNIVERSITY RANKINGS #49 STARS RATED FOR EXCELLENCE 2017

ACADEMIC GUIDEbook

CENTRE FOR DIPLOMA STUDIES

SESSION 2018 / 2019
http://www.ppd.utmspace.edu.my

Johor Bahru • Pulau Pinang • Kuala Lumpur • Kuching