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STUDENT STUDY GUIDE

Diploma in Building Services Engineering (DPB)

SECOND EDITION 2018

Politeknik Sultan Azlan Shah,
Civil Engineering Department,
Behrang Stesen,
35950 Behrang,
Perak.

: 05-4544431 : 05-4544993

: www.psas.edu.my : Politeknik Sultan Azlan Shah

STUDENT STUDY GUIDE

Diploma in Building Services Engineering **(DPB)**

NORAIMI BINTI AHMAD

Sr. MOHAMMAD ANUAR BIN SAFIAN

Second Edition 2018

Diterbitkan oleh :

Politeknik Sultan Azlan Shah

Behrang Stesen, Behrang

35950 Perak.

Tel :05-4544431

Faks:05-4544993

Email : http://www.psas.edu.my

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 Sr. Mohammad Anuar Bin Safian		
HEAD OF PROGRAMME		
 Noraimi Binti Ahmad		
LECTURERS		
 Abdul Aziz Bin Ahmad	 Haslinda Binti Ab. Aziz	 Abdul Muthalib Bin Abd. Rahman
 Aryuziyanti Binti Mohamad @ Mohd Nor	 Normila Binti Mokhtar	 Shahida Binti Yusof

LECTURERS		
 Ernisuhani Binti Mohamad Zamri @ Zam	 Mohd Nazri Bin Hj. Daros	 Mohd Zaidi Bin Mohd Jamil
 Samlisman A/L Choi Weng	 Mohd Darabi Bin Zolkafli	

CHECKLIST COURSES FOR DIPLOMA IN BUILDING SERVICES ENGINEERING

NAME:

REGISTRATION NUMBER:

NO.	COURSE CODE	COURSE	CREDIT	SESSION:	SESSION:	SESSION:	SESSION:	SESSION:	SESSION:
1	DUB1012	Pengajian Malaysia	2						INDUSTRIAL TRAINING
2	DUE1012	Communicative English 1	2						
3	DRB1XX0	Asas Unit Beruniform	0						
4	DUW1012	Occupational, Safety & Health	2						
5	DBS1012	Engineering Science	2						
6	DBM1013	Engineering Mathematics 1	3						
7	DCB1012	Construction and Materials	2						
8	DCB1022	Building Services Drawing	2						
9	DCB1032	Environmental Science	2						
10	DUA2012	Sains, Teknologi dan Kejuruteraan Dalam Islam*	2						
11	DUB2012	Nilai Masyarakat Malaysia**	2						
12	DRS2XX1	Sukan	1						
13	DRB2XX1	Unit Beruniform 1	1						
14	DPB2012	Entrepreneurship	2						
15	DBM2013	Engineering Mathematics 2	3						
16	DCB2042	CADD for Building Services	2						
17	DCB2052	Building Services Practical 1	2						
18	DCB2062	Electrical Services 1	2						
19	DCB2072	Plumbing Services	2						
20	DUE3012	Communicative English 2	2						
21	DRK3XX2	Kelab/ Persatuan	2						
22	DRB3XX2	Unit Beruniform 2	2						
23	DBM3013	Engineering Mathematics 3	3						
24	DCB3082	Building Services Practical 2	2						
25	DCB3092	Electrical Services 2	2						
26	DCB3102	Hydraulics	2						
27	DCB3113	Ventilation and Air Conditioning	3						
28	DUE5012	Communicative English 3	2						
29	DCB5122	Building Services Practical 3	2						
30	DCB5132	Fire Protection System	2						
31	DCB5142	Building Services Control System	2						
32	DCB5152	Lighting	2						
33	DCB5163	Air Conditioning System	3						
34	DCB5171	Project 1	1						
35	DCB5182	Introduction to Structures	2						
36	DCC2052	Introduction to Industrilised Building System (IBS)	2						
37	DBC2012	Computer Application	2						
38	DUA6022	Komunikasi dan Penyiaran Islam	2						
39	DCB6194	Project 2	4						
40	DCB6202	Contract & Estimating for Building Services	2						
41	DCB6212	Building Maintenance Management	2						
42	DCB6223	Building Services Design	3						
43	DCB6232	Building Transportation	2						
44	DCB6242	Supervisory Management	2						
45	DCB6252	Acoustics	2						
46	DUFXXX2	Foreign Language	2						
		TOTAL	**92**	**17**	**16**	**16**	**16**	**17**	**10**

1.0 INTRODUCTION DEPARTMENT OF POLYTECHNIC EDUCATION (JPP)

Pendidikan di Politeknik mula diperkenal di Malaysia melalui penubuhan politeknik pertamanya, Politeknik Ungku Omar di Ipoh di bawah United Nations Development Plan pada tahun 1969. Pendidikan ini diperkukuhkan dengan perakuan Jawatankuasa Kabinet mengenai pendidikan pada tahun 1979 dan Pelan Induk Perindustrian Kebangsaan pertama (1985-1995). Kesemua perancangan termasuk perakuan Jawatankuasa Kabinet mengenai latihan (1991), telah membolehkan penubuhan lebih banyak politeknik serta menambah program pengajian bagi memenuhi keperluan pekerja separa professional dalam bidang kejuruteraan, perdagangan dan perkhidmatan.

Bagi mengukuhkan peranan Politeknik dalam bidang pendidikan dan latihan, Jemaah Menteri pada 20 November 2009 telah menimbang Memorandum dari Menteri Pengajian Tinggi No. 871/2670/2009 dan bersetuju dengan Hala Tuju Transformasi Politeknik yang melibatkan empat teras berikut :

a) *Memperkasa Politeknik kearah menjadi pilihan yang setanding dengan university awam yang lain;*
b) *Membangunkan program pengajian dan penyelidikan dalam bidang tujahan yang bertunjangkan kekuatan di setiap Politeknik;*
c) *Memperkasa warga Politeknik dengan pengetahuan dan kemahiran tinggi; dan*
d) *Membina imej bereputasi tinggi dan budaya kerja yang cemerlang.*

Jemaah Menteri pada 26 Mac 2010 telah menimbang Memorandum dari Menteri Pengajian Tinggi No. 198/2685/2010 dan bersetuju supaya ditubuhkan empat buah Politeknik Metro dalam RMKe-9 dan enam buah dalam RMKe-10 dengan peruntukan sebanyak RM200 juta.

2.0 VISION & MISSION DEPARTMENT OF POLYTECHNIC EDUCATION (JPP)

Visi:

Menjadi institusi TVET premier yang diterajui industri

Misi:

a) *Menyediakan akses kepada program TVET yang berkualiti dan diiktiraf*
b) *Membangunkan kurikulum yang dipimpin industri dan meningkatkan kesediaan graduan melalui penglibatan industri yang diselaraskan*
c) *Menghasilkan graduan yang seimbang dan berdaya keusahawanan melalui program pengajian yang dinamik dan mampan*
d) *Mendapat pengiktirafan antarabangsa melalui kerjasama dan penyertaan aktif dalam komuniti TVET*

3.0 INTRODUCTION POLYTECHNIC SULTAN AZLAN SHAH (PSAS)

Politeknik Sultan Azlan Shah (PSAS) merupakan sebuah Politeknik yang ditubuhkan oleh Kerajaan Malaysia di permulaan abad ke-21. Ia merupakan politeknik yang ke-15 di negara ini dan didaftarkan dengan Politeknik Sultan Azlan Shah (sebelum ini dikenali dengan nama Politeknik Tanjung Malim). Di antara tujuan penubuhan PSAS ialah untuk membina upaya baharu politeknik bagi membangunkan sumber manusia negara untuk memenuhi keperluan Model Baharu Ekonomi (MBE) yang memberi penekanan kepada upaya inovasi dan kreativiti.

PSAS mempunyai 4 buah Jabatan Akademik iaitu:

- *Jabatan Kejuruteraan Mekanikal*
- *Jabatan Kejuruteraan Awam*
- *Jabatan Kejuruteraan Elektrik*
- *Jabatan Perdagangan*

dan PSAS juga mempunyai 2 Jabatan Sokongan iaitu:

- *Jabatan Pengajian Am*
- *Jabatan Matematik, Sains dan Komunikasi*

Selain itu, PSAS kini menawarkan Program Ijazah Sarjana Muda dan Kursus-kursus diploma.

4.0 VISION & MISSION POLYTECHNIC SULTAN AZLAN SHAH (PSAS)

Visi:
Menjadi institusi TVET perdana terpimpin industri menjelang 2020

Misi:
Melahirkan graduat yang holistik berciri keusahawanan dan seimbang berteraskan kurikulum terpimpin industri melalui ekosistem pengajaran dan pembelajaran yang berkualiti, inovatif dan dinamik serta mendapat pengiktirafan global.

5.0 DASAR KUALITI

PSAS bertekad untuk memberikan perkhidmatan pendidikan dan latihan dalam bidang teknikal dan vokasional melalui pelaksanaan sistem pengurusan kualiti yang dipertingkatkan keberkesanannya secara berterusan bagi melahirkan modal insan yang holistik, berciri keusahwanan dan seimbang selaras dengan keperluan gunatenaga negara.

6.0 OUTCOMES BASED EDUCATION

"OBE, like most concepts in education, has been interpreted in many ways" - *(Killen, 2000)*.
Talking about OBE, there are 3 levels:

1) Philosophy / Theory / Broad Perspective
2) Curricula / structures / procedures
3) Classroom practice (PBL, CL, AL, etc)

An educational philosophy that states education ought to be aimed at producing particular educational outcomes is giving students a particular, minimum level of knowledge and abilities. OBE addresses the following questions:

1) What do you want the students to learn?
2) Why do you want them to learn?
3) How can you best make students learn it?
4) How will you know what they have learnt?

Outcomes Based Education focuses on student learning by:

1. Using learning outcome statements to make explicit what the student is expected to be able to know, understand or do;
2. Providing learning activities which will help the student to reach these outcomes;
3. Assessing the extent to which the student meets these outcomes through the use of explicit assessment criteria.

6.1 Key Purpose of OBE

a) EQUIP - ALL students with the competencies and orientations needed for future success
b) IMPLEMENT - Programmes and conditions that maximize learning success for ALL students

6.2 OBE Principles

a) *Clarity of focus* – fokus kepada apa yang pelajar boleh buat dengan jayanya. (Adakah pelajar tahu dengan jelas sebelum mereka memulakan pembelajaran apa yang mereka sepatutnya tahu dan boleh buat apabila selesai pembelajaran?)

b) *Design down* – rekabentuk kurikulum bermula dari definisi yang jelas mengenai apa yang pelajar akan capai di akhir pendidikan formal mereka. (Adakah kurikulum telah digubal bermula dari hasil pembelajaran dengan cara yang sistematik supaya laluan untuk mencapainya jelas?)

c) *High expectation* – pensyarah meletakkan standard prestasi yang tinggi kepada pelajar. (Adakah harapan dan cabaran untuk berjaya diberikan kepada semua pelajar secara saksama – tiada bell curve?

d) *Expanded opportunities* – Pensyarah mesti menyediakan peluang yang secukupnya untuk berjaya. (Adakah pelajar diberi lebih dari satu peluang untuk mencapai standard yang ditetapkan?

6.3 Relationship between Curriculums, Instructions & Assessment

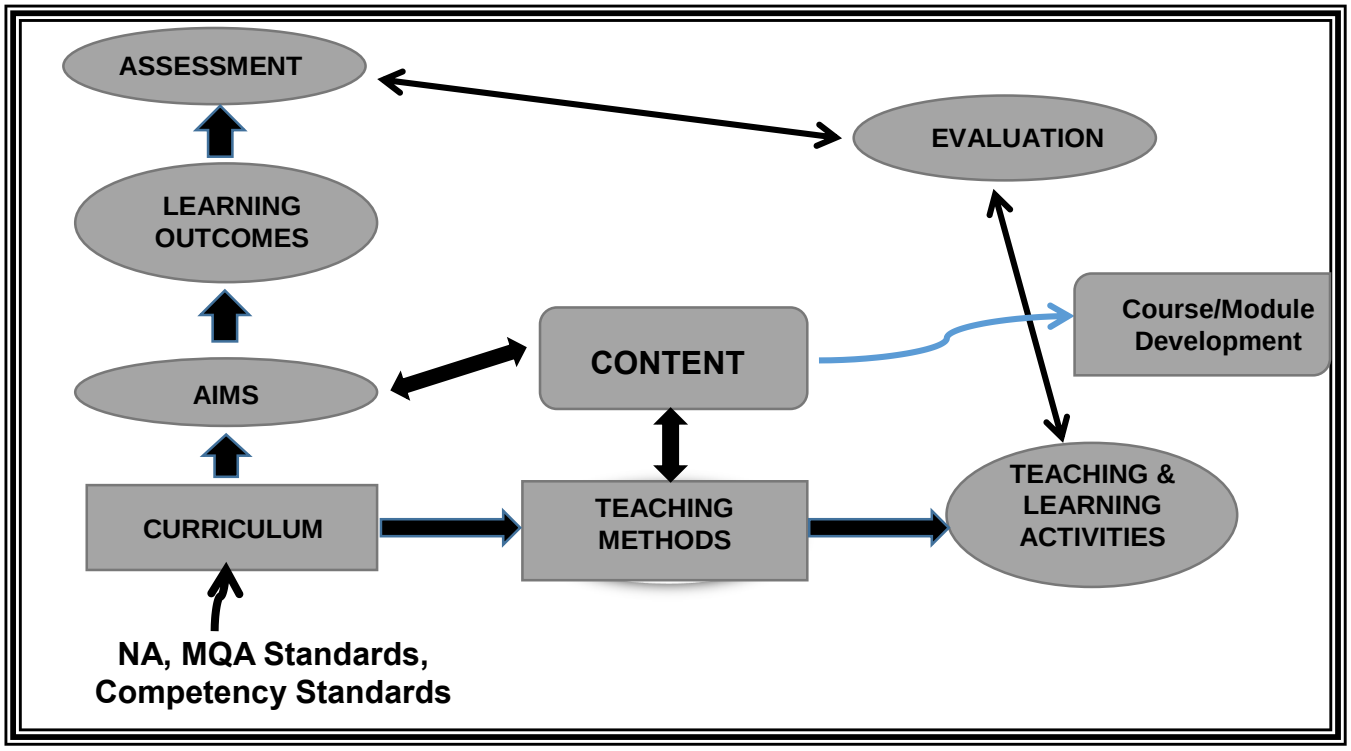

Figure 1: Relationship between Curriculums, Instructions & Assessment

6.4 Learning Outcomes: The shift from teachers to students

Table 1: The shift from teachers to students

Teacher – Students ↓ **Concerns for self** ↓ **What will I teach?** **What will I teach next?** ↓ **Content** ↓ **Non-behavioural objectives**	**Teacher – Student** ↓ **Concerns for students/ impact of teaching on students** ↓ **Are they learning what I teach?/What are the impacts of my teaching?/ What can they do as a result of my teaching?** ↓ **Behavioural objectives/ learning outcomes**

6.5 Differences between based learning system and OBE system

Table 2: The Differences between based learning system and OBE system

Content Based Learning System	Outcomes Based Learning System
Passive students	Active learners
Assessment process – exam & grade driven	Continuous assessment
Rote learning	Critical thinking, reasoning, reflection & action
Content based/broken into subjects	Integration knowledge, learning relevant/ connected real life situations
Textbook/worksheet focused & teacher centred	Learner centred & educator/ facilitator use group/ teamwork
See syllabus as rigid & non negotiable	Learning programmes seen as guides that allow educators to be innovative & creative in designing programmes/ activities
Teachers/trainers responsible for learning - motivated by personality of teacher	Learners take responsibility for their learning, learners motivated by constant feedback/ affirmation of worth
Emphasis what teacher hopes to achieve	Emphasis outcomes – what learner becomes & understands
Content placed in rigid time frames	Flexible time frames - learners work at own pace
Stay in single learning institution until complete	Learners can gather credits different institutions until achieve Qualification
Previous knowledge & experience in learning field ignored – Each time attends whole course	Recognition of prior learning: after pre-assessment, learners credited outcomes demonstrated or transfer credits elsewhere

7.0 LEARNING OUTCOMES

- **In simple terms :**

Specific, understandable, measurable, assessable and student-centered statements as to what a student will be able to do at the end of a period of study.

Why are these important?
• Lead to a more student-centred approach; • Mark a shift from the content of a course (what the teacher wants to teach) towards the outcome (what the student is able to do on successful completion of the programme/course); • Guide students in learning; • Help staff focus on what they want students to achieve; • Provide useful information to potential students and employers.

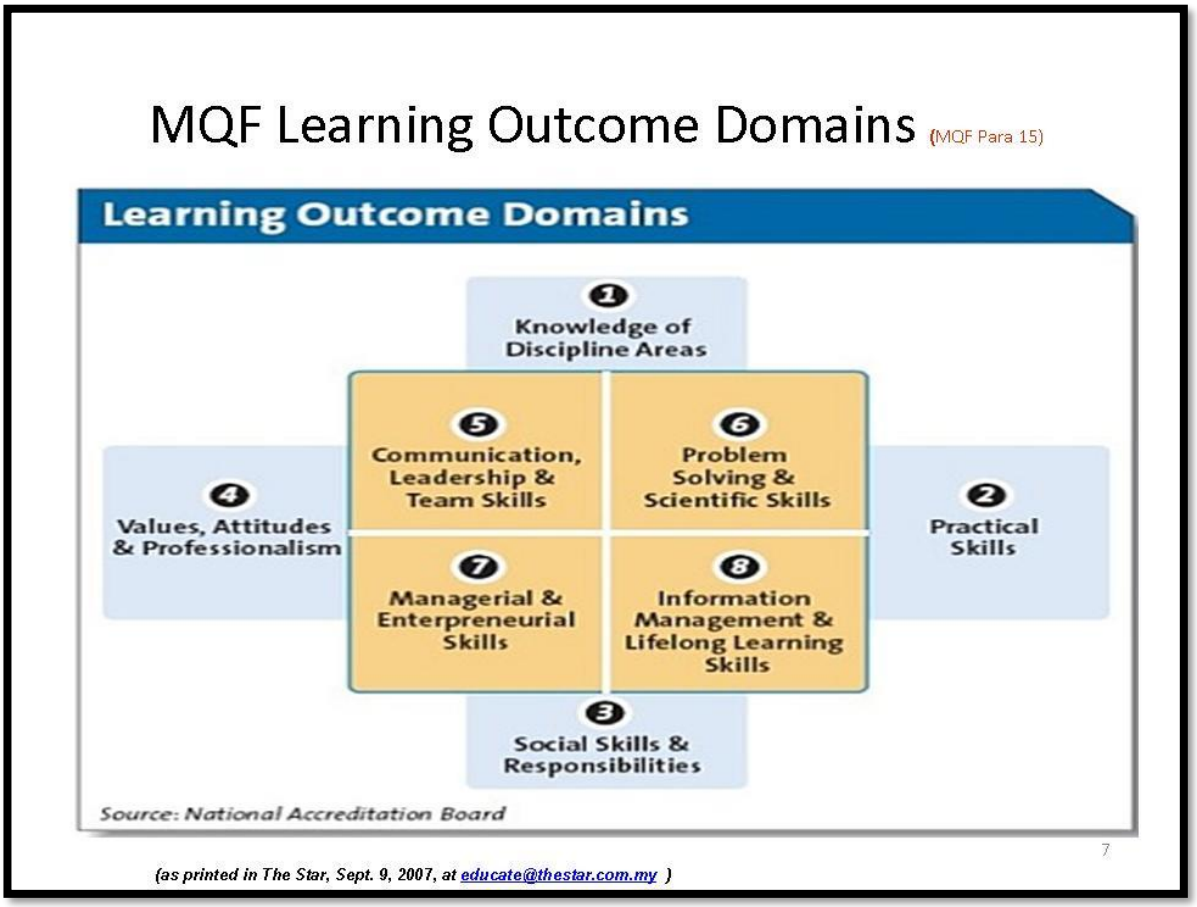

Figure 2 (a): MQF Learning Outcome Domains

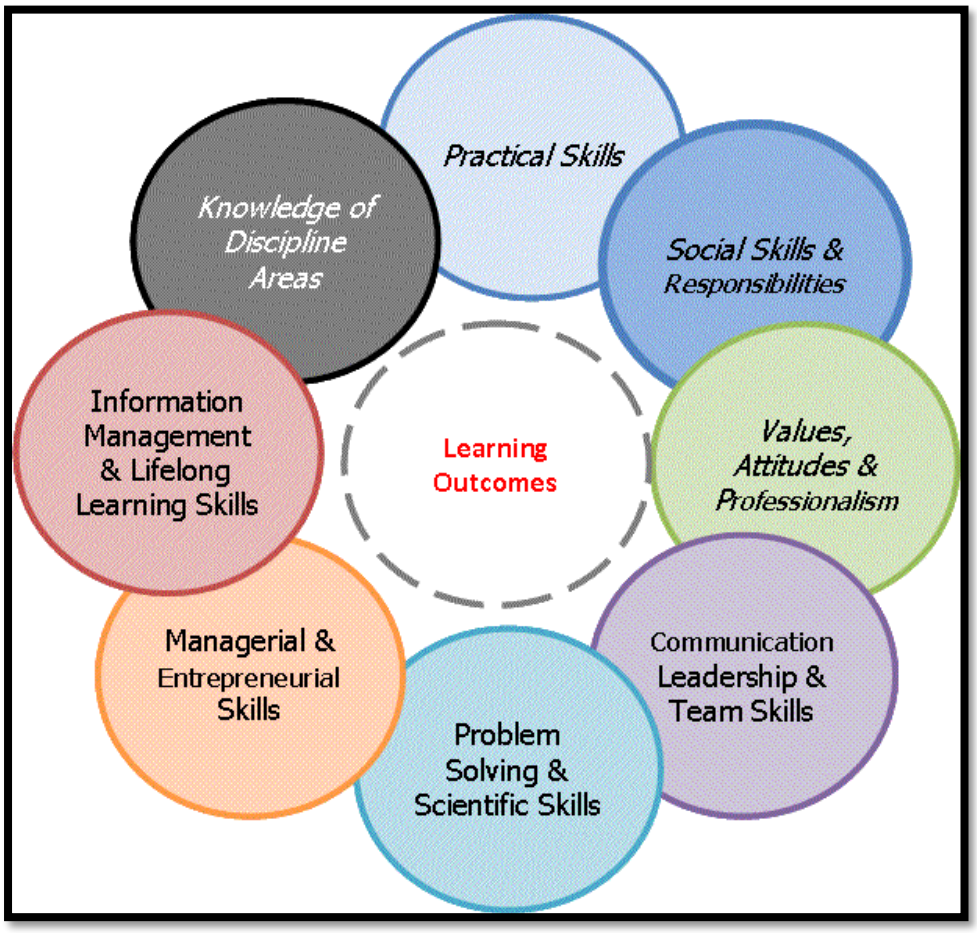

Figure 2 (b): MQF Learning Outcome Domains

Table 3: MQF Learning Outcome Domains

Knowledge of Discipline Areas	Practical Skills
• The knowing of major ideas • Mastery of the subject matter • Observing and recalling information • Recognising concepts	• Carrying out a professional task e.g. running, dancing, and diagnosis; • Reading and understanding instructions; • Perceiving and responding effectively • Applying learnt skills in a safe environment
Social Skills & Responsibilities	**Values, Attitudes & Professionalism**
• Demonstrating skills required in meeting people, and networking • Showing an interest in and concern of others • Being comfortable in talking with and accepting guidance and directions • Responding sympathetically and emphatically to others.	• Having feelings, perceptions, opinions and attitudes about oneself, towards others and the organisation; • Having the capacity to show sympathy • Having empathy and the capacity for tolerance • Good time management and respect for time
Communication, Leadership & Team Skills	**Problem Solving & Scientific Skills**
• Being able to write, speak and listen • Being responsible and dignified • Being a Team player • Having multicultural and multiracial competencies	• Projecting critical and lateral thinking and logical reasoning • Being creative and explorative • Being inspired • Producing new ideas and technologies based on existing skills
Managerial & Entrepreneurial Skills	**Information Management & Lifelong Learning Skills**
• Planning and implementing effectively • Knowing what to do and how to do at the right time and place • Making judgments and decisions • Having good time management	• Using ICT in the location and evaluation of information • Using information management systems • learning how to learn • Adopting a continuous professional development approach

8.0 STUDENT LEARNING TIME (SLT)

A period of time that a student should spend on the learning-teaching activities for a given credit which comprises guided learning, independent learning and assessment time.

a) Effective learning time or student effort in learning or the learning volume (a quantitative measurement of all learning activities), in order to achieve the specified learning outcomes;

b) Inclusive all learning time components (learning activities), i.e. formal and non-formal. Total time required by student to learn a particular component of curriculum;
    a. i.e. Official Contact Time + Guided Learning Time + Self Study Time (Independent learning) + Assessment Time.

c) Synonymous to student's academic load, e.g. credit hours; subjects; modules; etc.

9.0 PROGRAMME OVERVIEW

9.1 Programme Introduction

The Diploma in Building Services Engineering is designed to incorporate a wide discipline of production and maintenance of a stable internal environment that has the correct temperature, air quality and lighting levels. It requires the provision of all the necessary backup support systems such as power, hot and cold water and lifts. The installation of life protection systems such as fire alarms, escape routes and sprinkler systems is an important responsibility as well. These functions must be linked to sophisticated building management systems to ensure effective control and to minimize energy consumption. The graduates are forecast to bring buildings to life by designing the mechanical and electrical systems that allow people to function within an enclosed structure.

A student of this programme has undergone a core curriculum consisting of courses in mathematics, science, entrepreneurial skills, soft skills, health & safety, Islamic studies, moral education. This programme provides knowledge and skills in the principles and practice of building services and building construction and maintenance. This will naturally help to cope with the demand of building services sub-professionals in Malaysia. Various training methods with theory, practical, case studies, field trips and other innovative methods will be used to achieve the educational objectives.

Topics covered in this program include:

a) energy supply - electricity and renewable sources
b) air conditioning
c) water , drainage and plumbing
d) natural and artificial lighting
e) escalators and lifts
f) ventilation and refrigeration
g) communication lines and telephones
h) fire detection and protection
i) environmental science

9.2 Programme Synopsis

This programme is designed to equip students with sound knowledge in Building Services Engineering. It provides students with skills required for success in current or future employment. The content of the course has been chosen to prepare the students for a wide scope of career choices in related fields. It is also serves as a foundation for progression to achieve an undergraduate degree.

All students study the courses which are related and specialized in Building Services Engineering field. To graduate, the students are required to accumulate 92 credit hours. It is a combination of general subjects and specialized Building Services Engineering courses.

9.3 Job Prospect

The knowledge and skills that the students acquire from the program will enable them to participate in the job market such as specified as:

a) Building Services Technical Assistant
b) Site supervisor
c) Assistant Facility Manager
d) Maintenance Supervisor
e) Research Assistant
f) Laboratory/workshop Technician

9.4 Vision

To be Malaysia's number one provider of an innovative human capital through transformational education and training for the global workforce for 2015

9.5 Mission

Breaking boundaries for the creation of transformative and creative learning environment for an innovation led economy.

9.6 Programme Aims (PAI)

The programme aims to provide graduates with the versatility and ability to work in a cross-disciplinary environment especially in building operation, maintenance and services design. This programme has been designed to train and equip students with sound technical knowledge and practical skills pertaining to the field with the aim to absorbed into work environment or to seek further professional qualifications. This programme also aims to instil in graduates a sense of accountability and responsibility toward the environment and society with regard to professional ethics, social conduct in the work environment.

9.7 Programme Educational Objectives (PEO)

Upon completion of the programmed, the graduates should be able to:

i) apply knowledge, skills and attitude in fundamental of Building Services Engineering and technically competent in their respective fields.(p1,p2,p3,p4,p5)
ii) demonstrate leadership and teamwork skills, right attitudes and professional ethics.(p6,p11)
iii) develop critical thinking attitude in problems solving and able to communicate effectively in global work environment.(p7,p10)
iv) possess in lifelong learning and entrepreneurship, and striving for the forefront of technology.(p8,p9)

9.8 Programme Learning Outcomes (PLO)

Upon completion of the programmed, the graduates should be able to:

i) apply technical knowledge and social science/humanities knowledge to well-defined building services problem and to the personality development of an individual respectively (LD1)
ii) think creatively and solve related well-defined building services engineering problem systematically using appropriate tools and techniques (LD4).
iii) investigate and analyse related well-defined building services engineering problems (LD1)
iv) design solutions to well-defined building services engineering problems with consideration for building safety, health and environment. (LD1)
v) demonstrate practical and technical skills to conduct and monitor various jobs especially in building services engineering related works (LD2)
vi) communicate effectively in building services engineering community and society at large (LD3)
vii) practice social and interpersonal skills with other people in varying situations including teamwork (LD5)
viii) participate and benefit from life-long learning (LD6)
ix) comprehend management and entrepreneurial skills (LD7)
x) aware of professional and ethical responsibilities in multi-cultural environment (LD8)
xi) able to function as an effective team player with the capability to lead (LD9)

10.0 MATRIX OF PROGRAMME EDUCATIONAL OBJECTIVES (PEO) VS PROGRAMME LEARNING OUTCOME (PLO)

Programme Educational Objectives (PEO):

The **Diploma in Building Services Engineering** programme shall produce semi professionals who are:

	PEO	PLO1 LD1	PLO2 LD4	PLO3 LD1	PLO4 LD1	PLO5 LD2	PLO6 LD3	PLO7 LD5	PLO8 LD6	PLO9 LD7	PLO10 LD8	PLO11 LD9
1	knowledgeable, skills and attitudes in fundamental of Building Services Engineering and technically competent in their respective fields	√		√	√	√						
2	demonstrate leadership and teamwork skills, right attitudes and professional ethics.							√			√	√
3	develop critical thinking attitude in problems solving and able to communicate effectively in global work environment.		√				√	√				
4	posses in lifelong learning and entrepreneurship, and striving for the forefront of technology								√	√		

Learning Domain:

LD1 Knowledge

LD2 Practical Skills

LD3 Communication Skills

LD4 Critical Thinking and Problem Solving Skills

LD5 Social Skills and Responsibilities

LD6 Continuous Learning and Information Management Skills

LD7 Management and Entrepreneurial Skills

LD8 Professionalism, Ethics and Moral

LD9 Leadership and Teamwork Skills

11.0 MATRIX OF COURSES VS PROGRAMME LEARNING OUTCOME (PLO)

Table 4: Matrix of Courses Vs Programme Learning Outcome (PLO)

NO.	COURSES		PROGRAMME LEARNING OUTCOME (PLO)										
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
			Application Knowledge	Problem Solving Knowledge	Analysis & Investigation Knowledge	Design Knowledge	Practical Skills	Communication Skill	Social Responsibility	Life-long Learning / Info Management	Entrepreneurship	Professionalism & Ethics	Leadership / Teamwork Skills
COMPULSORY													
1	DUB1012	Pengajian Malaysia	√							√			
2	DUE1012	Communicative English 1	√					√					
3	DUA2012	Sains, Teknologi dan Kejuruteraan Dalam Islam*	√					√					
4	DUB2012	Nilai Masyarakat Malaysia**	√							√			
5	DRS2XX1	Sukan		√			√						√
6	DRB1XX0	Asas Unit Beruniform		√			√						√
7	DRB2XX1	Unit Beruniform 1		√			√						√
8	DRB3XX2	Unit Beruniform 2		√			√						√
9	DRK3XX2	Kelab/ Persatuan		√			√						√
10	DUE3012	Communicative English 2	√					√					
11	DUE5012	Communicative English 3	√					√					
12	DUA6022	Komunikasi dan Penyiaran Islam							√	√			

NO.	COURSES		PROGRAMME LEARNING OUTCOME (PLO)										
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
			Application Knowledge	Problem Solving Knowledge	Analysis & Investigation Knowledge	Design Knowledge	Practical Skills	Communication Skill	Social Responsibility	Life-long Learning / Info Management	Entrepreneurship	Professionalism & Ethics	Leadership / Teamwork Skills
COMMON CORE													
13	DUW1012	Occupational, Safety & Health	√	√								√	
14	DBS1012	Engineering Science	√	√			√						
15	DBM1013	Engineering Mathematics 1	√										
16	DPB2012	Entrepreneurship	√				√	√			√		
17	DBM2013	Engineering Mathematics 2	√										
18	DBM3013	Engineering Mathematics 3	√										
DISCIPLINE CORE													
19	DCB1012	Construction and Materials	√					√					
20	DCB1022	Building Services Drawing	√				√	√					
21	DCB1032	Environmental Science	√	√				√					
22	DCB2042	CADD for Building Services	√				√						√
23	DCB2052	Building Services Practical 1	√				√		√				
24	DCB2062	Electrical Services 1	√	√				√					

NO.	COURSES		PROGRAMME LEARNING OUTCOME (PLO)										
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
			Application Knowledge	Problem Solving Knowledge	Analysis & Investigation Knowledge	Design Knowledge	Practical Skills	Communication Skill	Social Responsibility	Life-long Learning / Info Management	Entrepreneurship	Professionalism & Ethics	Leadership / Teamwork Skills
25	DCB2072	Plumbing Services	√			√		√					
26	DCB3082	Building Services Practical 2	√				√		√				
27	DCB3092	Electrical Services 2	√	√									√
28	DCB3102	Hydraulics	√	√				√					
29	DCB3113	Ventilation and Air Conditioning	√		√								√
30	DCB5122	Building Services Practical 3	√				√		√				
31	DCB5132	Fire Protection System	√		√							√	
32	DCB5142	Building Services Control System	√	√	√			√					
33	DCB5152	Lighting	√	√		√			√				
34	DCB5163	Air Conditioning System	√			√							√
35	DCB5171	Project 1	√		√			√					
36	DCB6194	Project 2					√	√		√			
37	DCB6202	Contract & Estimating for Building Services	√	√				√					
38	DCB6212	Building Maintenance Management	√		√					√			
39	DCB6223	Building Services Design	√			√	√						√
40	DCB6232	Building Transportation	√		√			√					

NO.	COURSES		PROGRAMME LEARNING OUTCOME (PLO)										
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
			Application Knowledge	Problem Solving Knowledge	Analysis & Investigation Knowledge	Design Knowledge	Practical Skills	Communication Skill	Social Responsibility	Life-long Learning / Info Management	Entrepreneurship	Professionalism & Ethics	Leadership / Teamwork Skills
ELECTIVE													
41	DCB5182	Introduction to Structures	√	√					√				
42	DCB6242	Supervisory Management	√							√			
43	DCB6252	Acoustics	√	√					√				
44	DCC2052	Introduction to Industrilised Building System (IBS)	√				√	√					
45	DBC2012	Computer Application	√				√						
46	DUFXXX2	Foreign Language	√					√					
INDUSTRIAL TRAINING													
47	DUT40110	Industrial Training					√	√				√	√

12.0 PROGRAMME STRUCTURE FOR DIPLOMA IN BUILDING SERVICES ENGINEERING

Table 5: Programme Structure for Diploma in Building Services Engineering

COMPONENTS	COURSE CODE	COURSE	CONTACT HOURS			CREDIT
			L	P	T	
SEMESTER 1						
COMPULSORY	DUB 1012	PENGAJIAN MALAYSIA	1	0	2	2
	DUE 1012	COMMUNICATIVE ENGLISH	1	0	2	2
	DRB 1XX0	ASAS UNIT BERUNIFORM	0	2	0	0
COMMON CORE	DUW 1012	OCCUPATIONAL, SAFET Y & HEALTH	2	0	0	2
	DBM 1013	ENGINEERING MATHEMATICS 1	2	2	0	3
	DBS 1012	ENGINEERING SCIENCE	2	1	0	2
DISCIPLINE CORE	DCB 1012	CONSTRUCTION & MATERIALS	2	0	0	2
	DCB 1022	BUILDING SERVICES DRAWING	1	2	0	2
	DCB 1032	ENVIRONMENTAL SCIENCE	2	0	0	2
TOTAL			**22**			**17**
SEMESTER 2						
COMPULSORY	DUA 2012	SAINS ,TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM*	1	0	2	2
	DUB 2012	NILAI MASYARAKAT MALAYSIA **	1	0	2	
	DRS 2XX1	SUKAN	0	2	0	1
	DRB 2XX1	UNIT BERUNIFORM 1	0	2	0	
COMMON CORE	DPB 2012	ENTREPRENEURSHIP	2	1	0	2
	DBM 2013	ENGINEERING MATHEMATICS 2	2	0	2	3
DISCIPLINE CORE	DCB 2042	CADD FOR BUILDING SERVICES	1	2	0	2
	DCB 2052	BUILDING SERVICES PRACTICAL 1	0	4	0	2
	DCB 2062	ELECTRICAL SERVICES 1	2	0	0	2
	DCB 2072	PLUMBING SERVICES	2	0	0	2
TOTAL			**23**			**16**
SEMESTER 3						
COMPULSORY	DUE 3012	COMMUNICATIVE ENGLISH 2	1	0	2	2
	DRK 3XX2	KELAB / PERSATUAN	0	4	0	2
	DRB 3XX2	UNIT BERUNIFORM 2	0	4	0	
COMMON CORE	DBM 3013	ENGINEERING MATHEMATICS 3	2	0	2	3
DISCIPLINE CORE	DCB 3082	BUILDING SERVICES PRACTICAL 2	0	4	0	2
	DCB 3092	ELECTRICAL SERVICES 2	2	0	1	2
	DCB 3102	HYDRAULICS	2	0	1	2
	DCB 3113	VENTILATION AND AIR CONDITIONING	3	0	0	3
TOTAL			**24**			**16**

COMPONENTS	COURSE CODE	COURSE	CONTACT HOURS			CREDIT
			L	P	T	
SEMESTER 4						
COMPULSORY	DUE 5012	COMMUNICATIVE ENGLISH 3	1	0	2	2
DISCIPLINE CORE	DCB 5122	BUILDING SERVICES PRACTICAL 3	0	4	0	2
	DCB 5132	FIRE PROTECTION SYSTEM	2	0	0	2
	DCB 5142	BUILDING SERVICES CONTROL SYSTEM	2	0	1	2
	DCB 5152	LIGHTING	2	0	1	2
	DCB 5163	AIR CONDITIONING SYSTEM	3	0	0	3
	DCB 5171	PROJECT 1	1	0	0	1
ELECTIVE	DCB 5182	INTRODUCTION TO STRUCTURE	2	0	1	2
	DCC 2052	INTRODUCTION TO INDUSTRILISED BUILDING SYSTEM (IBS)	1	2	0	
	DCB 2012	COMPUTER APPLICATION	1	2	0	
TOTAL			**22**			**16**
SEMESTER 5						
COMPULSORY	DUA 6022	KOMUNIKASI DAN PENYIARAN ISLAM	1	0	2	2
DISCIPLINE CORE	DCB 6194	PROJECT 2	0	8	0	4
	DCB 6202	CONTRACT & ESTIMATING FOR BUILDING SERVICES	2	0	1	2
	DCB 6212	BUILDING MAINTENANCE MANAGEMENT	2	0	0	2
	DCB 6223	BUILDING SERVICES DESIGN	1	4	0	3
	DCB 6232	BUILDING TRANSPORTATION	2	0	0	2
ELECTIVE	DCB 6242	SUPERVISORY MANAGEMENT	2	0	0	2
	DCB 6252	ACOUSTICS	2	0	0	
	DUF XXX2	FOREIGN LANGUAGE	1	0	2	
TOTAL			**25**			**17**
SEMESTER 6						
	DUT40110	INDUSTRIAL TRAINING	**0**	**10**	**0**	**10**
TOTAL			**10**			**10**

COMPONENTS	TOTAL CREDIT
Compulsory	15
Common Core	15
Discipline Core	48
Elective	4
Industrial Training	10
TOTAL CREDIT	92

NOTES:	
	Total
Lecture	56
Practical	70
Tutorial	
CONTACT HOURS	126

Legend / Notes:

L: Lecture, **P**: Practical/Lab, **T**: Tutorial**, C**: Credit
(The numbers indicated under L, P & T represent the contact hours per week, to be used as a guide for time table preparation)

Students are required to take a minimum of four credits of elective courses.
* For Muslim Students
** For Non Muslim Students

For Co-curriculum,
1. Path 1: Sport and Club
2. Path 2: Uniform Unit

Uniform Unit (Students who choose Uniform Unit are required to complete 5 modules for commisioning).

1. DRB1XX0 (Asas Unit Beruniform) is a prerequisite to DRB2xx1 (Unit Beruniform 1).
2. DRB2XX1 and DRB3XX2 are graded.
3. DRB5XX0 and DRB6XX0 are optional, non-graded, audited courses with full assessment.
   Upon completion, students are entitled for commissioning.

13.0 COURSES SYNOPSIS AND COURSES ASSESSMENT

The course assessment comprises two components, namely:

i. **Coursework Assessment (CA)**
Coursework assessments that measures knowledge, practical skills and generic skills are carried out in the form of continuous assessment. Coursework assessments total score comprises the knowledge and practical marks **ONLY**. It does not include the mark of generic skills.

ii. **Final Examination Assessment (FE)**
Final examination is carried out at the end of the semester.

13.1 Semester 1

KURSUS : DUB 1012 – PENGAJIAN MALAYSIA
KREDIT : 2
PRA SYARAT : TIADA
SINOPSIS :

PENGAJIAN MALAYSIA memupuk penghayatan ke arah melahirkan generasi yang cintakan negara. Kursus ini juga dapat mendidik kelompok masyarakat yang mempunyai daya juang yang tinggi dan mampu menghadapi cabaran di peringkat antarabangsa. Kursus ini memberi penghayatan tentang sejarah dan politik, perlembagaan Malaysia, kemasyarakatan dan perpaduan, pembangunan negara dan isu-isu keprihatinan negara. Objektif kursus ini adalah untuk melahirkan warganegara yang setia dan cintakan negara, berwawasan serta bangga menjadi rakyat Malaysia.

HASIL PEMBELAJARAN KURSUS (CLO):

Di akhir kursus ini, pelajar akan dapat:

1.Menerangkan dengan baik sejarah bangsa dan negara. (C2, LD1)
2.Menjelaskan Perlembagaan Malaysia dan sistem pemerintahan negara. (C2, LD1)
3. Melaksanakan aktiviti berkaitan kenegaraan ke arah peningkatan patriotisme pelajar. (C3, LD1: A3, LD6)

PENTAKSIRAN:

KURSUS: DUB 1012 – PENGAJIAN MALAYSIA			
PENTAKSIRAN KERJA KURSUS (KK): 70%			
NO.	**KERJA KURSUS (KK)**	**JUMLAH KERJA KURSUS**	**PERATUSAN KERJA KURSUS**
1	Kuiz	**2**	**20%**
2	E-Folio	**1**	**30%**
3	Pembentangan	**1**	**20%**
PEPERIKSAAN AKHIR (PA): 30%			
JUMLAH KESELURUHAN: 100%			

COURSE : **DUE 1012 – COMMUNICATIVE ENGLISH 1**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

COMMUNICATIVE ENGLISH 1 focuses on speaking skills for students to develop the ability to communicate effectively and confidently in group discussions and in a variety of social interactions. It is designed to provide students with appropriate reading skills to comprehend a variety of texts. It is also aimed to equip students with effective presentation skills.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply appropriate communication skills in discussions and conversations. (C3)
2. comprehend selected texts using appropriate reading skills.(C2)
3. interpret current issues / topics of interest in written form. (C2)
4. apply effective presentation skills.(C3, A3)

ASSESSMENT:

COURSE: DUE 1012 – COMMUNICATIVE ENGLISH 1			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Group Discussion	**1**	**20%**
2	Listening Test	**1**	**20%**
3	Quiz	**1**	**10%**
4	Test	**1**	**20%**
5	Presentation	**1**	**30%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DUW 1012 – OCCUPATIONAL SAFETY AND HEALTH**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

OCCUPATIONAL SAFETY AND HEALTH course is designed to impart understanding of the self-regulatory concepts and provisions under the Occupational Safety & Health Act (OSHA). This course presents the responsibilities of employers and employees in implementing and complying with the safety procedures at work. This course provide an understanding of the key issues in OSH management, incident prevention, Emergency Preparedness and Response (EPR), fire safety, occupational first aid, Hazard Identification, Risk Assessment and Risk Control (HIRARC) and guide the students gradually into this multi-disciplinary science.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. identify the OSH legislation and its compliance in Malaysia. (C2, LD1)
2. explain briefly incident hazards, risks and safe work practices in order to maintain health and safe work environment. (C2, LD1)
3. discuss cooperatively in responding to an accident action at workplace. (C3,LD1; A2,LD4)
4. adhere to the safety procedures in respective fields. (A3, LD8)

ASSESSMENT:

COURSE: DUW 1012 – OCCUPATIONAL SAFETY AND HEALTH			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Group Discussion	**1**	**10%**
2	Case Study	**3**	**60%**
3	Quiz	**2**	**10%**
4	Test	**1**	**20%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DBS 1012 – ENGINEERING SCIENCE**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

ENGINEERING SCIENCE is an applied science with theoretical concepts and practical learning sessions that can be applied in the engineering fields. This course focuses on the Physical Quantities, Measurement, Linear Motion, Force, Work, Energy, Power, Solid, Fluid, Temperature and Heat.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. solve the basic engineering science problems by using related concept. (C3, LD1)
2. organise an appropriate experiments to prove related physic principles. (P3, LD2)
3. apply related physic principles in various situations to enhance knowledge. (C3, LD1)

ASSESSMENT:

COURSE: DBS 1012 – ENGINEERING SCIENCE			
COURSEWORK ASSESSMENT (CA): 60%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Lab Work	**4**	**30%**
2	Theoretical Exercise	**2**	**10%**
3	Quiz	**1**	**5%**
4	Theory Test	**1**	**15%**
FINAL EXAMINATION (FE): 40%			
TOTAL: 100%			

COURSE : **DBM 1013 – ENGINEERING MATHEMATICS 1**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

ENGINEERING MATHEMATICS 1 expose students to the basic algebra including perform partial fractions. This course also exposes the concept of trigonometry and the method to solve trigonometry problems by using basic identities, compound angle and double angle formulae. Students also will be introduced to the theory of complex number and matrices method to solve simultaneous equation. This course also introduces students to concept of vector and scalar.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. identify mathematical methods in solving the mathematical problems. (C2, LD1)
2. solve the mathematical problems by using appropriate techniques and solutions. (C3, LD1)
3. practice mathematical knowledge and skills in different mathematics problem. (C3, LD1)

ASSESSMENT:

COURSE: DBM 1013 – ENGINEERING MATHEMATICS 1			
COURSEWORK ASSESSMENT (CA): 60%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Tutorial Exercise	**4**	**20%**
2	Assignment	**2**	**15%**
3	Quiz	**2**	**10%**
4	Test	**1**	**15%**
FINAL EXAMINATION (FE): 40%			
TOTAL: 100%			

COURSE : **DCB 1012 – CONSTRUCTION AND MATERIALS**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

CONSTRUCTION AND MATERIALS provides knowledge on materials used in structural construction of buildings. This course emphasizes on the use of finishing and fitting materials used in construction of structures. This course also explains the effects, advantages and disadvantages of materials used.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply precisely the knowledge and principles of the use of building materials in the construction of buildings. (C3, PLO1)
2. apply accurately the concept and principles of construction using a variety of construction methods. (C3, PLO1)
3. demonstrate good communication skills in oral presentation in group on assigned topics within a stipulated time frame. (A3, PLO6)

ASSESSMENT:

COURSE: DCB 1012 – CONSTRUCTION AND MATERIALS			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	End of Chapter	**2**	**20%**
2	Quiz	**2**	**5%**
3	Test	**2**	**15%**
4	Presentation	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 1022 – BUILDING SERVICES DRAWING**
CREDIT (S) : **2**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

BUILDING SERVICES DRAWING provides knowledge of basic lettering, engineering drawing techniques, geometrical drawing, orthographic projection, dimensioning, isometric drawing and building services drawing. This module stresses on the use of standard engineering terminology. This module will give practical skills for manual drawing.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge on appropriate tools and instruments and standards used in engineering drawing. (C3, PLO1)
2. construct accurately the building services technical drawing by using related engineering standard. (P4, PLO5)
3. demonstrate good communication skills individually on assigned topics within a stipulated time frame. (A3, PLO6)

ASSESSMENT:

COURSE: DCB 1022 – BUILDING SERVICES DRAWING			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Practical Drawing	**8**	**60%**
2	Test	**2**	**40%**
3	Presentation	**1**	**GSA**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DCB 1032 – ENVIRONMENTAL SCIENCE**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

ENVIRONMENTAL SCIENCE exposes and enhances students' knowledge on the relationship between human and environment. This course emphasizes on the energy, energy management, energy conservation and environmental aspect in the warm humid climate which have direct or indirect influences on the building services. It also provides knowledge in heat and thermal comfort.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course students will be able to:-

1. apply knowledge precisely the relationship between human and its environment on the aspect of the sources of energy and the human comfort in warm and humid climate. (C3, PLO1)
2. solve problem for the thermal transmission by using the correct formula. (C3, PLO2)
3. demonstrate good communication skills in oral and essay presentation in groups on assigned topics within a stipulated time frame. (A3,PLO6)

ASSESSMENT:

COURSE: DCB 1032 – ENVIRONMENTAL SCIENCE			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	End of Chapter	**2**	**20%**
2	Quiz	**2**	**5%**
3	Test	**2**	**15%**
4	Presentation	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

13.2 Semester 2

KURSUS : DUA 2012 – SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM
KREDIT : 2
PRA SYARAT : TIADA
SINOPSIS :

SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM memberi pengetahuan tentang konsep Islam sebagai al-Din dan seterusnya membincangkan konsep sains, teknologi dan kejuruteraan dalam Islam serta impaknya, pencapaiannya dalam tamadun Islam, prinsip serta peranan syariah dan etika Islam, peranan kaedah fiqh serta aplikasinya.

HASIL PEMBELAJARAN KURSUS (CLO):

Di akhir kursus ini, pelajar akan dapat :

1. Menghuraikan konsep Islam sebagai cara hidup. (C2, LD1 : P2, LD2)
2. Menjelaskan konsep sains, teknologi dan kejuruteraan dalam Islam. (C2, LD1)
3. Membincangkan prinsip syariah dan kaedah fiqh dalam sains, teknologi dan kejuruteraan. (C3, LD1 : A3, LD6)

PENTAKSIRAN:

KURSUS: DUA 2012 – SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM			
PENTAKSIRAN KERJA KURSUS (KK): 100%			
NO.	**KERJA KURSUS (KK)**	**JUMLAH KERJA KURSUS**	**PERATUSAN KERJA KURSUS**
1	Ujian Amali	**1**	**20%**
2	Kuiz	**2**	**20%**
3	E-Folio	**1**	**30%**
4	Projek	**1**	**30%**
PEPERIKSAAN AKHIR (PA): TIADA			
JUMLAH KESELURUHAN: 100%			

**** NOTES: HANYA UNTUK PELAJAR MUSLIM SAHAJA***

KURSUS : DUB 2012 – NILAI MASYARAKAT MALAYSIA

KREDIT : 2

PRA SYARAT : TIADA

SINOPSIS :

NILAI MASYARAKAT MALAYSIA membincangkan aspek sejarah pembentukan masyarakat Malaysia, nilai-nilai agama serta adat resam dan budaya masyarakat majmuk. Selain itu, pelajar diberi kefahaman mengenai tanggungjawab individu dalam kehidupan dan cabaran-cabaran dalam membangunkan masyarakat Malaysia.

HASIL PEMBELAJARAN KURSUS (CLO):

Di akhir kursus ini, pelajar akan dapat :

1. Menerangkan sejarah pembentukan masyarakat dan nilai agama di Malaysia. (C2 : LD1)
2. Menghubung kait tanggungjawab individu dalam kehidupan masyarakat dan negara. (C3 : LD1, A2 : LD5)
3. Membincangkan cabaran-cabaran dalam membangunkan masyarakat Malaysia. (C3 : LD1, A3 : LD6)

PENTAKSIRAN:

KURSUS: DUB 2012 – NILAI MASYARAKAT MALAYSIA			
PENTAKSIRAN KERJA KURSUS (KK): 100%			
NO.	**KERJA KURSUS (KK)**	**JUMLAH KERJA KURSUS**	**PERATUSAN KERJA KURSUS**
1	Kuiz	**2**	**20%**
2	E-Folio	**1**	**30%**
3	Projek	**2**	**50%**
PEPERIKSAAN AKHIR (PA): TIADA			
JUMLAH KESELURUHAN: 100%			

**** NOTES: HANYA UNTUK PELAJAR NON-MUSLIM SAHAJA***

COURSE : **DPB 2012 – ENTREPRENEURSHIP**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

ENTREPRENEURSHIP focuses the principles and concept of entrepreneurship. This course concentrates on the systematic methods of getting business ideas. This course also prepares the students on ways to conduct and control the business including fundamental of management, marketing and financing. It also emphasizes on the preparation of business plan, thus developing their entrepreneurial skills.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. explain clearly the concept of entrepreneurship, process and procedures involved in developing effective business plan. (C2, LD1)
2. work cooperatively in group to complete the assigned project based on entrepreneurial skills. (P3, LD2) (A3, LD7)
3. present business plan creatively using knowledge gained via group. (A2, LD3)

ASSESSMENT:

COURSE: DPB 2012 – ENTREPRENEURSHIP			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**1**	**15%**
2	Quiz	**2**	**10%**
3	Case Study	**1**	**5%**
4	Project	**1**	**50%**
5	Presentation	**1**	**20%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DBM 2013 – ENGINEERING MATHEMATICS 2**

CREDIT (S) : **3**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

ENGINEERING MATHEMATICS 2 exposes students to the basic laws of exponents and logarithms. This course also introduces the basic rules of differentiation concept to solve problems that relate maximum, minimum and calculate the rates of changes. This course also discuss integration concept in order to strengthen student knowledge for solving area and volume bounded region problems. In addition, students also will learn application of both techniques of differentiation and integration.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. solve the mathematical problems by using appropriate mathematical techniques and solutions. (C3, LD1)
2. show the solution for differentiation and integration problem by using appropriate method.(C3, LD1)
3. practice mathematical knowledge and skills in different mathematics problem. (C3, LD1)

ASSESSMENT:

COURSE: DBM 2013 – ENGINEERING MATHEMATICS 2			
COURSEWORK ASSESSMENT (CA): 60%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Tutorial Exercise	**3**	**15%**
2	Assignment	**2**	**20%**
3	Quiz	**2**	**10%**
4	Test	**1**	**15%**
FINAL EXAMINATION (FE): 40%			
TOTAL: 100%			

COURSE : **DCB 2042 – CADD FOR BUILDING SERVICES**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

CADD FOR BUILDING SERVICES exposes students to the use of the CADD (COMPUTER AIDED DESIGN AND DRAFTING) package to produce drawings that are accurate and easily modified. This course emphasizes on designing, drawing, calculating and measuring skills using the CADD package.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course student should be able to:

1. Apply the knowledge on the latest Computer Aided Design and Drafting (CADD) software for design and drafting using basic CADD commands. (C3, PLO1)
2. Construct building services engineering drawings for plumbing, electrical and mechanical systems using Computer Aided Design and Drafting (CADD) software. (P4, PLO5)
3. Demonstrate ability to work in team to complete tasks during assigned laboratory exercises. (A3, PLO11)

ASSESSMENT:

COURSE: DCB 2042 – CADD FOR BUILDING SERVICES			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Practical Exercises	**8**	**60%**
2	Test	**2**	**40%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DCB 2052 –BUILDING SERVICES PRACTICAL 1**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

BUILDING SERVICES PRACTICAL 1 exposes students to the basic electrical wiring, welding works and pipe works. This course also provides knowledge, training and skills in carrying out small projects.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. Produce a practical report with appropriate method. (C3, PLO1)
2. Perform practical tasks on wiring, welding and pipe work with appropriate procedure. (P4, PLO5)
3. demonstrate awareness of safety in practical work procedures and practices. (A3, PLO7)

ASSESSMENT:

COURSE: DCB 2052 – BUILDING SERVICES PRACTICAL 1			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Practical Work	**12**	**70%**
2	Practical Report	**12**	**30%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DCB 2062 -ELECTRICAL SERVICES 1**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

ELECTRICAL SERVICES 1 provides students with knowledge on concepts and principles of electrical installation in building services. The course emphasizes on safety in electrical installations, supply systems, domestic circuits, conductors and cables, wiring system, wiring accessories and overload current protection against. This course also provides the necessary knowledge to enhance student's ability to understand the methods employed to test the integrity of an electrical installation.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the principles of a basic electrical installation and its adherence to the IEE regulations or related standards. (C3, PLO1)
2. solve problems related to consumer circuits, common electrical faults and over current protection based on IEE regulations or related standards. (C3, PLO2)
3. demonstrate good communication skills in oral presentation in groups on assigned topics within a stipulated time frame. (A3,PLO6)

ASSESSMENT:

COURSE: DCB 2062 – ELECTRICAL SERVICES 1			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	End of Chapter	**2**	**20%**
2	Quiz	**2**	**5%**
3	Test	**2**	**15%**
4	Essay Writing	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 2072 -PLUMBING SERVICES**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

PLUMBING SERVICES provides knowledge of concepts and basic principles related to piping systems and pipe works. The emphasis of this course is on cold water supply systems, hot water supply systems, drainage systems, sanitation systems and sewage treatment systems. This course also provides knowledge and exercises on plumbing system selection and sizing.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the knowledge on plumbing systems of a building satisfactorily. (C3, PLO1)
2. design pipework and equipment for plumbing systems of a building using current plumbing specifications and standards.(C5, PLO4)
3. demonstrate good communication skills through a groups oral presentation on assigned topics within a stipulated time frame.(A3, PLO6)

ASSESSMENT:

COURSE: DCB 2072 – PLUMBING SERVICES			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	End of Chapter	**2**	**20%**
2	Quiz	**2**	**5%**
3	Test	**2**	**15%**
4	Presentation	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

13.3 Semester 3

COURSE : DUE 3012 – COMMUNICATIVE ENGLISH 2
CREDIT (S) : 2
PREREQUISITE (S) : DUE 1012 – COMMUNICATIVE ENGLISH 1
SYNOPSIS :

COMMUNICATIVE ENGLISH 2 emphasises the skills required at the workplace to describe products or services as well as processes or procedures. It also focuses on the skills to give and respond to instructions. This course will also enable students to make and reply to enquiries and complaints.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. describe products or services related to their field of studies using appropriate language. (C3, A3)
2. transfer information on processes or procedures using appropriate language from non-linear to linear form. (C3)
3. listen and respond to enquiries using appropriate language.(C3)
4. make and respond to complaints using appropriate language.(C3)

ASSESSMENT:

COURSE: DUE 3012 – COMMUNICATIVE ENGLISH 2			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Presentation	**1**	**30%**
2	Assignment	**1**	**20%**
3	Test	**1**	**20%**
4	Listening Test	**1**	**10%**
5	Role Play	**1**	**20%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DBM 3013 – ENGINEERING MATHEMATICS 3**
CREDIT (S) : **3**
PREREQUISITE (S) : **DBM 2013 – ENGINEERING MATHEMATICS 2**
SYNOPSIS :

ENGINEERING MATHEMATICS 3 exposes students to the statistical and probability concepts and their applications in interpreting data. The course also introduces numerical methods concept to solve simultaneous equations by using Gaussian Elimination method, LU Decomposition using Doolittle and Crout methods, polynomial problems using Simple Fixed Point Iteration and Newton-Raphson methods. In additional, the course also discusses optimization problems by using Linear Programming. In order to strengthen the students in solving advanced engineering problems, Ordinary Differential Equation (ODE) is also included.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. solve the mathematical problems by using appropriate techniques and solutions. (C3, LD1)
2. show the solution for statistics and probability problems, and linear programming by using appropriate mathematical methods. (C3, LD1)
3. practice mathematical knowledge and skills in different mathematical problem. (C3, LD1)

ASSESSMENT:

COURSE: DBM 3013 – ENGINEERING MATHEMATICS 3			
COURSEWORK ASSESSMENT (CA): 60%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Tutorial Exercise	**4**	**20%**
2	Assignment	**2**	**15%**
3	Quiz	**2**	**10%**
4	Test	**1**	**15%**
FINAL EXAMINATION (FE): 40%			
TOTAL: 100%			

COURSE : **DCB 3082 – BUILDING SERVICES PRACTICAL 2**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

BUILDING SERVICES PRACTICAL 2 provides basic knowledge on mechanical, electrical and hydraulic systems. The emphasis of the course is on practical works related to mechanical, electrical and hydraulics. This course provides knowledge and practical training using standard testing equipment, making observations and recording and producing a report related to the practical carried out.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. perform practical task on mechanical services, electrical services and hydraulics with appropriate procedure. (P4,PLO5)
1. produce a practical report with appropriate method. (C3,PLO1)
2. demonstrate awareness of safety in practical work procedures and practices. (A3, PLO7)

ASSESSMENT:

COURSE: DCB 3082 – BUILDING SERVICES PRACTICAL 2			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Practical Work	**12**	**70%**
2	Practical Report	**12**	**30%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DCB 3092 – ELECTRICAL SERVICES 2**

CREDIT (S) : **2**

PREREQUISITE (S) : **DCB 2062 – ELECTRICAL SERVICES 1**

SYNOPSIS :

ELECTRICAL SERVICES 2 course provides students with the knowledge in the electrical field. The emphasis of this course is on DC generator, DC motor, AC generator, AC motor, transformer, standby generator, electronic components and telecommunication system. This course also provides students with knowledge in the application of electrical systems in building services system.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge on electric, electronic and telecommunication system using the related standards. (C3, PLO1)
2. solve problems on electrical machines using related formulae.(C3, PLO2)
3. demonstrate ability to work in a team to complete assigned tasks during tutorial exercise session.(A3, PLO11)

ASSESSMENT:

COURSE: DCB 3092 – ELECTRICAL SERVICES 2			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Quiz	**2**	**5%**
2	Test	**2**	**15%**
3	Tutorial Exercise	**2**	**20%**
4	End of Chapter	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 3102 – HYDRAULICS**
CREDIT (S) : **2**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

HYDRAULICS course provides the students with knowledge and understanding of behaviour of fluids through the study of fluid flow. This course includes the study of fluid characteristics, fluid pressure, Bernoulli's theorem, Reynolds number, energy loss in piping networks and uniform flow in open channel.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the concept and basic principles of fluid flow satisfactorily. (C3, PLO1)
2. solve problems on fluid mechanics in pipe networks using correct formula. (C3, PLO2)
3. demonstrate good written communication skills in essay on assigned topics. (A3, PLO6)

ASSESSMENT:

COURSE: DCB 3102 – HYDRAULICS			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Quiz	**2**	**5%**
2	Test	**2**	**15%**
3	Essay Writing	**1**	**10%**
4	End Of Chapter	**2**	**20%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 3113 – VENTILATION AND AIR CONDITIONING**
CREDIT (S) : **3**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

VENTILATION AND AIR CONDITIONING SYSTEM provides knowledge of types of ventilation systems, the basic concepts and principles of heat, psychometrics, mechanical vapour refrigeration, classification of refrigeration systems, refrigerants, in air conditioning system, air conditioning equipment, components, control and heat pumps.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge on ventilation and air conditioning system based on ASHRAE standards. (C3, PLO1)
2. analyze the appropriate equipment, air conditioning components and the control systems for buildings. (C4, PLO3)
3. demonstrate ability to work in team to complete assigned tasks during discussions sessions. (A3, PLO11)

ASSESSMENT:

COURSE: DCB 3113 – VENTILATION AND AIR CONDITIONING			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Quiz	**2**	**5%**
2	Test	**2**	**15%**
3	Essay Writing	**1**	**10%**
4	End of Chapter	**2**	**20%**
5	Discussion	**1**	**GSA**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

13.4 Semester 4

COURSE : DUE 5012 – COMMUNICATIVE ENGLISH 3
CREDIT (S) : 2
PREREQUISITE (S) : DUE 3012 – COMMUNICATIVE ENGLISH 2
SYNOPSIS :

COMMUNICATIVE ENGLISH 3 aims to develop the necessary skills in students to carry out a mini project as well as job hunting. Students will learn to present ideas through the use of graphs and charts. Students will learn the process of job hunting which includes job search strategies and making enquiries. They will also learn to write resumes and cover letters. The students will develop skills to introduce themselves, highlight their strengths and abilities, present ideas, express opinions and respond appropriately during job interviews.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. describe information contained in graphs and charts effectively. (C4, A3)
2. apply job hunting mechanics appropriately. (C3)
3. respond to interview questions using appropriate language when applying for jobs. (C3)

ASSESSMENT:

<table>
<tr><th colspan="4">COURSE: DUE 5012 – COMMUNICATIVE ENGLISH 3</th></tr>
<tr><th colspan="4">COURSEWORK ASSESSMENT (CA): 100%</th></tr>
<tr><th>NO.</th><th colspan="2">COURSEWORK ASSESSMENT</th><th>QUANTITY OF ASSESSMENT</th><th>COURSEWORK ASSESSMENT PERCENTAGE</th></tr>
<tr><td>1</td><td colspan="2">Test</td><td>1</td><td>20%</td></tr>
<tr><td>2</td><td colspan="2">Presentation</td><td>1</td><td>30%</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Written Task</td><td>Resume</td><td>1</td><td>10%</td></tr>
<tr><td>Cover Letter</td><td>1</td><td>10%</td></tr>
<tr><td>4</td><td colspan="2">Mock Interview</td><td>1</td><td>30%</td></tr>
<tr><th colspan="4">FINAL EXAMINATION (FE): NONE</th></tr>
<tr><th colspan="4">TOTAL: 100%</th></tr>
</table>

COURSE : **DCB 5122 – BUILDING SERVICES PRACTICAL 3**
CREDIT (S) : **2**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

BUILDING SERVICES PRACTICAL 3 provides basic knowledge regarding building services control system, lighting, fire protection system and air conditioning system. This course also provides knowledge and practical training using standard testing equipment, making and recording observations to produce a report related to the practical work.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the knowledge on building services control system, fire protection, lighting system and air conditioning accurately. (C3, PLO1)
2. perform practical work in compliance with the current standards and regulations. (P4, PLO5)
3. demonstrate awareness of safety in practical work procedure and practices. (A3, PLO7)

ASSESSMENT:

COURSE: DCB 5122 – BUILDING SERVICES PRACTICAL 3			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Practical Work	**10**	**70%**
2	Practical Report	**10**	**30%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DCB 5132 – FIRE PROTECTION SYSTEM**
CREDIT (S) : **2**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

FIRE PROTECTION SYSTEM provides knowledge on concept and fundamental of fire protection and prevention system. It emphasizes on the regulations for fire protection systems, passive and active fire protection.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the knowledge on fire protection system, fire prevention system and the application of fire protection system in a building satisfactorily. (C3, PLO1)
2. analyze the compliance of fire protection system equipment and the fire prevention system to the regulations of the Fire and Rescue Department of Malaysia. (C4, PLO3)
3. demonstrate understanding of fire protection system application in assigned topic. (A3, PLO10)

ASSESSMENT:

COURSE: DCB 5132 – FIRE PROTECTION SYSTEM			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**15%**
2	Quiz	**2**	**5%**
3	End of Chapter	**1**	**15%**
4	Case Study	**1**	**10%**
5	Presentation	**1**	**5%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 5142 – BUILDING SERVICES CONTROL SYSTEM**
CREDIT (S) : **2**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

BUILDING SERVICES CONTROL SYSTEMS covers the fundamental principles of building services control systems for domestic, commercial and industrial buildings. Topics include classification of systems, block diagrams, sensors and instrumentation, final control elements, controller characteristics and control modes, microprocessors and building automated systems. Students will be led through various examples of related control system problems and solutions.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the concepts and fundamental of control systems applied in the field building services. (C3, PLO1)
2. solve problems related to the principles of control modes and block diagrams in building services. (C3, PLO2)
3. analyze the application of complex control systems in building automation system (BAS) and building management system (BMS). (C4, PLO3)
4. demonstrate good written communication skills in essay on assigned topics. (A3, PLO6)

ASSESSMENT:

COURSE: DCB 5142 – BUILDING SERVICES CONTROL SYSTEMS			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**15%**
2	Quiz	**2**	**5%**
3	End of Chapter	**1**	**20%**
4	Case Study	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 5152 – LIGHTING**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

LIGHTING provides knowledge on the concepts and basic principles of lighting in buildings and scientific applications. The emphasis of the course is on the principles of lighting encompassing natural lighting, artificial lighting and emergency lighting. This course also provides knowledge on the lighting design for a building.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the knowledge on illumination fundamentals satisfactorily. (C3, PLO1)
2. solve problems for direct illuminance, daylight factors and average daylight factors using the correct formula. (C3, PLO2)
3. design a basic general lighting system using the lumen method. (C5, PLO4)
4. demonstrate awareness of social responsibility on an assigned topic for end of chapter assignments. (A3, PLO7)

ASSESSMENT:

COURSE: DCB 5152 – LIGHTING			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**15%**
2	Quiz	**2**	**5%**
3	End of Chapter	**1**	**10%**
4	Tutorial Exercises	**2**	**20%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 5163 – AIR CONDITIONING SYSTEM**
CREDIT (S) : **3**
PREREQUISITE (S) : **DCB 3113 – VENTILATION AND AIR CONDITIONING**
SYNOPSIS :

AIR CONDITIONING SYSTEM provides knowledge on the calculation and design of an air-conditioning system and air movement in buildings. This course also provides knowledge on new technologies for air conditioning system.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge on an appropriate equipment, machines and new technologies on air conditioning systems for buildings correctly. (C3, PLO1)
2. design the air conditioning system and air flow in buildings according to the CIBSE design guides. (C5,PLO4)
3. demonstrate ability to work in team to complete assigned tasks during discussion sessions. (A3, PLO11)

ASSESSMENT:

COURSE: DCB 5163 –AIR CONDITIONING SYSTEM			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Quiz	**2**	**5%**
2	Test	**2**	**15%**
3	Essay Writing	**1**	**10%**
4	End of Chapter	**2**	**20%**
5	Discussion	**1**	**GSA**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 5171 – PROJECT 1**

CREDIT (S) : **1**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

PROJECT 1 gives students the opportunity to apply their knowledge in Building Services and related technology to solve a problem related to the design of a system. This course provides exposure to the selection and preliminary planning of a project, methods of preparing and presenting a proposal on the selected topics and producing a preliminary project report. It helps to build team work, communication skills, work planning, decision making and creativity to achieve the end results.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge to prepare a proposal and a project report for a building services engineering project satisfactorily. (C3, PLO1)
2. analyze a project report for a building services engineering project. (C4, PLO3)
3. demonstrate good communication skills in oral presentation in groups on assigned topics within a stipulated time frame. (A3, PLO6)

ASSESSMENT:

COURSE: DCB 5171 – PROJECT 1				
COURSEWORK ASSESSMENT (CA): 100%				
NO.	**COURSEWORK ASSESSMENT**		**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Presentation		**1**	**20%**
2	Weekly Progress Work (Log Book)		**1**	**20%**
3	Report	Project Report	**1**	**40%**
		Proposal	**1**	**20%**
FINAL EXAMINATION (FE): NONE				
TOTAL: 100%				

ELECTIVE COURSES FOR SEMESTER 4:

COURSE : DCB 5182 – INTRODUCTION TO STRUCTURES
CREDIT (S) : 2
PREREQUISITE (S) : NONE
SYNOPSIS :

INTRODUCTION TO STRUCTURES provides knowledge on structural concepts used in building. This course introduces framework structural system, basic principles of types of forces, strength of materials and behavior of loaded structures. This course also provides exposure to loaded structures on direct stresses.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply clearly the principles and concept of structure, structural mechanics and strength of materials. (C3, PLO1)
2. solve problems for structural mechanics and strength of material using the correct method. (C3, PLO2)
3. demonstrate awareness of social responsibility on an assigned topic for end of chapter assignments. (A3, PLO7)

ASSESSMENT:

COURSE: DCB 5182 – STRUCTURE FOR BUILDING SERVICES			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**15%**
2	Quiz	**2**	**5%**
3	End of Chapter	**3**	**30%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCC 2052 – INTRODUCTION TO INDUSTRILISED BUILDING SYSTEM (IBS)**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

INTRODUCTION TO INDUSTRIALISED BUILDING SYSTEM (IBS) covers basic concept of IBS concept and components used in the construction industries. Students will learn various forms of creative precast panels and panel production at precast yard erection on site. The students will also be exposed to the concept of modular coordination and buildability of designs.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to ;

1. apply the concept of Industrialised Building System (IBS) including the concepts of precast panel in the system .(C3,PLO1)
2. complete the calculations on IBS Score and modular coordination precisely for a building structure. (P4, PLO5)
3. demonstrate good communication skills in individually /group presentation on assigned topic within a stipulated time frame. (A3, PLO6)

ASSESSMENT:

COURSE: DCC 2052 – INTRODUCTION TO INDUSTRILISED BUILDING SYSTEM (IBS)			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**40%**
2	Quiz	**1**	**10%**
3	Case Study	**1**	**30%**
4	Practical Work	**1**	**20%**
5	Presentation	**1**	**GSA**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DBC 2012 – COMPUTER APPLICATION**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

COMPUTER APPLICATION exposes students to different packages of applications software such as word processor, spreadsheet, database, presentation, project management and diagramming. This course mainly emphasize on the practical aspects of using applications software. As the result, students will have opportunity to manipulate and create a variety of techniques and styles to produce documents.

COURSE LEARNING OUTCOME (CLO):

Upon completion of this course, students should be able to:

1. apply computer application knowledge and skills to perform related task. (C3, LD1)
2. complete appropriate lab work task by using suitable application software to enhance computer knowledge and skills. (P4, LD2)
3. organise a complete project report by using appropriate application software. (P4, LD2)

ASSESSMENT:

COURSE: DBC 2012 – COMPUTER APPLICATION			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Practical Test	**1**	**20%**
2	Lab Work	**6**	**60%**
3	Project	**1**	**20%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

13.5 Semester 5

KURSUS : DUA 6022 – KOMUNIKASI DAN PENYIARAN ISLAM
KREDIT : 2
PRA SYARAT : TIADA
SINOPSIS :

KOMUNIKASI DAN PENYIARAN ISLAM memfokuskan kepada penguasaan konsep, kemahiran komunikasi dan penyiaran Islam bagi meningkatkan kefahaman pelajar secara holistik terhadap kursus ini.

HASIL PEMBELAJARAN KURSUS (CLO):

Di akhir kursus ini, pelajar akan dapat :

1. Menjelaskan konsep komunikasi dan penyiaran dalam Islam. (C2 : LD1)
2. Menghubung kait isu-isu semasa dalam komunikasi Islam. (C3, LD1 : A4, LD5)
3. Menunjukkan kemahiran pengurusan dakwah dalam bidang penyiaran Islam. (C3, LD1 : A3, LD6)

PENTAKSIRAN:

KURSUS: DUA 6022 – KOMUNIKASI DAN PENYIARAN ISLAM			
PENTAKSIRAN KERJA KURSUS (KK): 100%			
NO.	**KERJA KURSUS (KK)**	**JUMLAH KERJA KURSUS**	**PERATUSAN KERJA KURSUS**
1	Pembentangan	**1**	**20%**
2	Kuiz	**2**	**20%**
3	E-Folio	**1**	**30%**
4	Projek	**1**	**30%**
PEPERIKSAAN AKHIR (PA): TIADA			
JUMLAH KESELURUHAN: 100%			

COURSE : **DCB 6194 – PROJECT 2**
CREDIT (S) : **4**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

PROJECT 2 enhances the ability of students to apply their knowledge in Building Services and related technology on a problem related to the design of a system. This course encourages students to work independently in conducting experiments in the laboratory/workshop, field work, academic research, and design of the building services related fields. It also enhances students' understanding and application of the overall research including a project's theory, background, research areas, data analysis, presentation and report writing. It helps to develop teamwork, communication skills, work planning, decision making and creativity to complete a project.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. complete the implementation of a building services project based on relevant standards and regulations successfully. (P4, PLO5)
2. demonstrate good oral and written communication skills in a report on an assigned project following a specified format. (A3, PLO6)
3. demonstrate continuous learning and information management skills while engaging in independent acquisition of new knowledge and skills to develop a project. (A3, PLO8)

ASSESSMENT:

COURSE: DCB 6194 – PROJECT 2			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Project Report	**1**	**30%**
2	Project	**1**	**40%**
3	Weekly Progress Work	**1**	**30%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DCB 6202 – CONTRACT AND ESTIMATING FOR BUILDING SERVICES**

CREDIT (S) : **2**

PREREQUISITE (S) : **DCB1012 - CONSTRUCTION AND MATERIALS**

SYNOPSIS :

CONTRACT AND ESTIMATING FOR BUILDING SERVICES exposes students to knowledge of the construction industry in general, tender procedures, contract procedures, preliminary estimating methods, built-up rates and quantity measurements. The course emphasizes on contract conditions and provides exposure to students regarding the procedures and standard practices in the construction field based on the Standard Form of Contract (P.W.D. Form 203/203A with the latest version). The course covers cold and hot water piping works, waste pipework, vent pipes and electrical supply works. Students will also learn to prepare schedules of materials and bills of quantities following current developments.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge in general information on the construction industry, tender procedures and contract procedures in the Malaysian Construction Industry. (C3,PLO1)
2. solve problems systematically for preliminary estimation methods and quantity measurements in relation to project estimation . (C3,PLO2)
3. demonstrate good communication skills in oral presentation on assigned topics within a stipulated time frame. (A3, PLO6)

ASSESSMENT:

COURSE: DCB 6202 – CONTRACT AND ESTIMATING FOR BUILDING SERVICES			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**15%**
2	Quiz	**2**	**5%**
3	End of Chapter	**2**	**20%**
4	Presentation	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 6212 – BUILDING MAINTENANCE MANAGEMENT**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

BUILDING MAINTENANCE MANAGEMENT provides the students with knowledge on basic organizational and managerial concepts in building maintenance management. This course emphasizes on the types, categories, and characteristics of building maintenance system. This course also discusses the maintenance works, work schedule and tasks implementation, budget preparation and record keeping to ensure the quality of building maintenance operations.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge on concepts of building maintenance management clearly. (C3, PLO1)
2. analyze management system in building maintenance correctly. (C4, PLO3)
3. demonstrate continuous learning and information management skills while engaging in independent acquisition of new knowledge and skills to develop a case study. (A3, PLO8)

ASSESSMENT:

COURSE: DCB 6212 – BUILDING MAINTENANCE MANAGEMENT			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**20%**
2	Quiz	**2**	**10%**
3	End of Chapter	**1**	**5%**
4	Case Study	**2**	**15%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

COURSE : **DCB 6223 – BUILDING SERVICES DESIGN**

CREDIT (S) : **3**

PREREQUISITE (S) : **i. DCB5132 FIRE PROTECTION SYSTEM**
ii. DCB5152 LIGHTING
iii. DCB5163 AIR CONDITIONING SYSTEM

SYNOPSIS :

BUILDING SERVICES DESIGN provides the opportunity for the students to be able to integrate and apply their knowledge in the design process of building services systems. It also develops the students' ability to carry out a simple design and co-ordinate building services work using suitable CADD software.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the knowledge on design of building services system appropriately. (C3, PLO1)
2. design a building services system for a building based on related standards and suitable software. (C5, PLO4)
3. construct schematic and detailed drawings for building services system by using suitable CADD software. (P4, PLO5)
4. demonstrate ability to work in team to complete tasks for assigned project. (A3, PLO11)

ASSESSMENT:

COURSE: DCB 6223 –BUILDING SERVICES DESIGN			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Project Report	**7**	**70%**
2	Presentation	**1**	**30%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DCB 6232 – BUILDING TRANSPORTATION**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

BUILDING TRANSPORTATION course provides students with knowledge on the basic concepts of internal circulation in buildings and the principles of building transportation systems. This course emphasizes the types of building transportation systems, the factors to be considered in locating lifts and escalators in a building, and the requirements in traffic analysis and system design. Students will learn the equipment functions and the operational patterns of lifts and escalators. They will understand the advantages and disadvantages of different building transportation systems. They will also understand the rules, legislations, and Acts which are related to the design and installation of building transportation systems.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge on the concept and principles of transportation systems applied on the buildings. (C3,PLO1)
2. analyze the traffic design requirements for a building transportation system according to the Uniform Building By-laws and manufacturer's guides. (C4,PLO3)
3. demonstrate good communication skills through an oral presentation in group on assigned topics within a stipulated time frame. (A3, PLO6)

ASSESSMENT:

COURSE: DCB 6232 –BUILDING TRANSPORTATION			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**15%**
2	Quiz	**2**	**5%**
3	End of Chapter	**1**	**20%**
4	Presentation	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

ELECTIVE COURSES FOR SEMESTER 5:

COURSE : DCB 6242 – SUPERVISORY MANAGEMENT
CREDIT (S) : 2
PREREQUISITE (S) : DUW1012 - OCCUPATIONAL, SAFETY & HEALTH
SYNOPSIS :

SUPERVISORY MANAGEMENT provides knowledge regarding the factors involved in supervisory works. The emphasis of the course is on the organization, management and training, leadership styles, management, work evaluation and analysis, equipment assembly maintenance, workplace condition and environment in supervisory management. This course also provides knowledge and technical skills in administration and human resource management and how it improves work quality and productivity in the workplace.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply the concept of organization, management and training, leadership and managerial work clearly. (C3, PLO1)
2. apply knowledge on communication skills, concept and purpose of planning, evaluation and job analysis, human resource and training, workplace condition and environment in the organization. (C3, PLO1)
3. demonstrate continuous learning and information management skill while engaging in independent acquisition of new knowledge and skill to develop a project. (A3,PLO8)

ASSESSMENT:

COURSE: DCB 6242 – SUPERVISORY MANAGEMENT			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**40%**
2	Quiz	**2**	**10%**
3	Project	**1**	**40%**
4	Presentation	**1**	**10%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DCB 6252 – ACOUSTICS**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

ACOUSTICS provides knowledge on the concepts of sound and vibration. This course stresses on the measurement of sound and vibration and their effects on building structures and the environment. The course provides input for building space development for a more comfortable environment.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. apply knowledge on the concepts of acoustics on building structures and environment appropriately. (C3, PLO1)
2. solve problems related to noise for comfortable building space development and environment. (C3,PLO2)
3. demonstrate awareness of social responsibility on an assigned topic for essay writing assignments. (A3, PLO7)

ASSESSMENT:

COURSE: DCB 6252 – ACOUSTICS			
COURSEWORK ASSESSMENT (CA): 50%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**15%**
2	Quiz	**2**	**5%**
3	End of Chapter	**2**	**20%**
4	Essay Writing	**1**	**10%**
FINAL EXAMINATION (FE): 50%			
TOTAL: 100%			

KURSUS : DUF 1012 – BAHASA ARAB 1

KREDIT : 2

PRA SYARAT : TIADA

SINOPSIS :

BAHASA ARAB 1 ini membincangkan kemahiran mendengar, bertutur dan menulis huruf-huruf konsonan, vokal dan perkataan Bahasa Arab. Pelajar akan diperkenalkan dengan bunyi-bunyi vokal dan konsonan Bahasa Arab. Ganti Nama Diri akan digunakan sebagai paksi kepada 14 bentuk perubahan kata Bahasa Arab. Pendekatan komunikasi akan diterapkan melalui dialog-dialog yang memberi penekanan kepada konteks sebenar komunikasi dan gaya bahasa yang diperlukan. Pelajar akan mampu untuk menuturkan frasa-frasa mudah dalam konteks komunikasi harian.

HASIL PEMBELAJARAN KURSUS (CLO):

Di akhir kursus ini, pelajar akan dapat:

1. Menulis huruf-huruf konsonan, vokal, suku kata dan perkataan Bahasa Arab termasuk sistem pernomboran, masa dan warna dengan betul. (C1)
2. Bertutur dan membaca mengenai ucap selamat dan perbualan asas dengan menggunakan perkataan, frasa dan ayat yang betul.(C3, A2)
3. Menggunakan ganti nama diri yang dihubungkan dengan kata nama, kata kerja dan kata tugas dalam aktiviti harian dengan betul. (C3)

ASSESSMENT:

KURSUS: DUF 1012 – BAHASA ARAB 1			
PENTAKSIRAN KERJA KURSUS (KK): 100%			
NO.	**KERJA KURSUS (KK)**	**JUMLAH KERJA KURSUS**	**PERATUSAN KERJA KURSUS**
1	Kuiz	**2**	**20%**
2	Ujian Lisan	**1**	**30%**
3	Ujian Bertulis	**1**	**30%**
4	Main Peranan	**1**	**20%**
PEPERIKSAAN AKHIR (PA): TIADA			
JUMLAH KESELURUHAN: 100%			

COURSE : **DUF 1022 – MANDARIN 1**
CREDIT (S) : **2**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

MANDARIN 1 is intended for students who have no background in Mandarin. This is the first of a three-level Mandarin Language programme designed specifically for polytechnic students. The course will emphasize greatly on developing students' oral communication skills in situational contexts through class activities such as role plays, simulations and other relevant oral tasks. Students are expected to take part in all language skills conducted in class to ensure success in attaining the elementary level proficiency. In this course, students will be introduced to the basic *Hanyu Pinyin* system (Chinese Phonetic Alphabet) and *Hanzi* (Chinese characters). Finally, this course provides a basic insight into the Chinese culture.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. identify and produce the basic sounds according to the system of *Hanyu Pinyin*. (C1, LD 1)
2. listen and respond to oral discourse effectively. (C2, LD 3)
3. deliver an oral presentation effectively. (C3, A2, LD 3)
4. read and comprehend some simple sentences in *Hanyu Pinyin*. (C3, LD 3)
5. write about 40 – 60 basic *Hanzi* correctly.(C3, A2, LD 3)

ASSESSMENT:

COURSE: DUF 1022 – MANDARIN 1			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Quiz	**2**	**30%**
2	Oral Test	**1**	**25%**
3	Final Test	**1**	**30%**
4	Written Task	**1**	**15%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DUF 1032 – JAPANESE 1**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

JAPANESE 1 is an introductory course in which students will be exposed to basic communication skills in the Japanese Language. They will also be exposed to the Hiragana characters to help them in their reading and writing skills. Students will learn the basic grammar and vocabulary required in daily communicative contexts.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. pronounce Hiragana characters and words correctly. (C1)
2. listen and respond using appropriate communication skills that demonstrates Japanese culture. (A2)
3. read and respond to statements and / or texts / dialogues written in Hiragana. (C2)
4. write characters / words / sentences or dialogues in Hiragana correctly. (C3)

ASSESSMENT:

COURSE: DUF 1032 – JAPANESE 1			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**2**	**40%**
2	Quiz	**2**	**20%**
3	Practical Task	**1**	**10%**
4	Role Play	**1**	**30%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DUF 1042 – FRENCH 1**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

FRENCH 1 is the elementary level of French language course designed specifically for students in the Degree programmes at the Polytechnics who possess no background knowledge on pertaining language. This course emphasizes on the four language skills i.e. listening, speaking, reading and writing. It is also designed to create awareness and understanding of the French culture.

COURSE LEARNING OUTCOME (CLO):

Upon completion of this course, students should be able to:

1. communicate using simple basic French. (C3)
2. demonstrate good oral communication skills used in daily life (C3, A2)
3. apply formal and informal way of presentation. (C3, A2)
4. comprehend simple expressions in French to enable them to count, express themselves, talk about others and use WH-questions to communicate effectively. (C2)
5. use the vocabulary, grammar and language conventions appropriate for this level. (C3)

ASSESSMENT:

COURSE: DUF 1042 – FRENCH 1			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Test	**1**	**20%**
2	Quiz	**2**	**30%**
3	Role Play	**1**	**30%**
4	Individual Oral Presentation	**1**	**20%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DUF 1052 – SPANISH 1**
CREDIT (S) : **2**
PREREQUISITE (S) : **NONE**
SYNOPSIS :

SPANISH 1 is an elementary language course intended for polytechnic students who have no background in Spanish. The course consists of an introduction to Spanish and aims to provide basic communicative skills to the learners. The course covers all four language skills. Students will be introduced to the basic grammatical structures of the language, vocabulary needed in daily communicative contexts and to the Hispanic culture. Communicative approach to teaching and learning will be used in order to encourage the students to talk and participate actively in the learning process. Students are expected to interact to questions, perform short dialogues and role-plays and other related activities.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. read and comprehend text in particular language effectively. (C2)
2. listen and respond effectively to show understanding of basic communication skills. (C3)
3. deliver oral presentation effectively using correct pronunciation and grammar (C3, A2)
4. apply the basic knowledge of the language in everyday situations. (C3)
5. comprehend the knowledge of the Hispanic world, its people and their culture. (C2)

ASSESSMENT:

COURSE: DUF 1052 – SPANISH 1			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Quiz	**2**	**30%**
2	Listening Test	**1**	**20%**
3	Role Play	**1**	**30%**
4	Individual Oral Presentation	**1**	**20%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

COURSE : **DUF 1062 – GERMAN 1**

CREDIT (S) : **2**

PREREQUISITE (S) : **NONE**

SYNOPSIS :

GERMAN 1 is designed to develop the student's four basic language skills in German. Students will be introduced to the basic grammatical structures of the language, vocabulary needed in daily communicative contexts and to the German culture. Communicative approach to teaching and learning will be used in order to encourage the students to talk and participate actively in the learning process. Students are expected to interact to questions, delivering oral presentation and other related activities.

COURSE LEARNING OUTCOMES (CLO):

Upon completion of this course, students should be able to:

1. read and comprehend texts in particular languages effectively. (C2)
2. listen and respond effectively to show understanding of basic communication skills. (C2)
3. construct basic sentence structure appropriately. (C3)
4. apply the basic knowledge of the language in everyday situations using oral presentation. (C3,A2)

ASSESSMENT:

COURSE: DUF 1062 – GERMAN 1			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**	**QUANTITY OF ASSESSMENT**	**COURSEWORK ASSESSMENT PERCENTAGE**
1	Quiz	**1**	**20%**
2	Listening Test	**1**	**20%**
3	Final Test	**1**	**30%**
4	Individual Oral Presentation	**1**	**30%**
5	Creative Performance	**1**	**GSA**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

13.6 Semester 6

COURSE : DUT 40110 – INDUSTRIAL TRAINING
CREDIT (S) : 10
PREREQUISITE (S) : NONE
SYNOPSIS :

INDUSTRIAL TRAINING exposes students to related workplace competencies demanded by industries. This course provides exposure to students in terms of technology literacy, effective communication, practice social skills and teamwork, policies, procedures and regulations, professional ethics and reporting. It also equips students with real work experience, thus helping students to perform as novice workers.

LEARNING OUTCOMES:

Upon completion of this course, students should be able to:

1. apply related knowledge and skills at the workplace. (C3, P2)
2. communicate effectively with others. (A3)
3. practice teamwork. (A5)
4. professionally and ethically comply with policies, procedures and rules of the organization. (A5)
5. explain the tasks assigned (during the industrial training) according to the prescribed format. (P2, A4)

ASSESSMENT:

COURSE: DUT 40110 – INDUSTRIAL TRAINING			
COURSEWORK ASSESSMENT (CA): 100%			
NO.	**COURSEWORK ASSESSMENT**		**COURSEWORK ASSESSMENT PERCENTAGE**
1	**INSTITUTION EVALUATION (40%)**	Report on Industrial Training	**20%**
		Presentation	**10%**
		Observation	**10%**
	INDUSTRY EVALUATION (60%)	Reflective Journal	**20%**
		Practical Task	**40%**
FINAL EXAMINATION (FE): NONE			
TOTAL: 100%			

Table 6: SUMMARY - COURSEWORK ASSESSMENT FOR DIPLOMA IN BUILDING SERVICES ENGINEERING

COURSE CODE	COURSE	MODE		ASSESSMENT TASKS FOR COURSEWORK (CA)																											
		CA	FE	QUIZ	TEST / THEORY TEST	END OF CHAPTER	PRESENTATION	E-FOLIO	GROUP DISCUSSION /	WRITTEN TASK (RESUME + COVER LETTER)	MOCK INTERVIEW	LISTENING TEST	ROLE PLAY	CASE STUDY	LAB WORK	THEORETICAL EXERCISE	TUTORIAL EXERCISE	ASSIGNMENT	PRACTICAL DRAWING	UJIAN AMALI	PROJECT	PRACTICAL EXERCISES	PRACTICAL WORK	PRACRICAL REPORT	ESSAY WRITING	PROJECT REPORT	PROPOSAL	WEEKLY PROGRESS WORK (LOG BOOK)	TUNJUKCARA	PRAKTIKAL
SEMESTER 1																															
DUB 1012	PENGAJIAN MALAYSIA	70%	30%	2 (20%)			1 (20%)	1 (30%)																							
DUE 1012	COMMUNICATIVE ENGLISH	100%		1 (10%)	1 (20%)		1 (30%)		1 (20%)			1 (20%)																			
DRB 1XX0	ASAS UNIT BERUNIFORM	100%																												1 (40%)	1 (60%)
DUW 1012	OCCUPATIONAL, SAFET Y & HEALTH	100%		2 (10%)	1 (20%)				1 (10%)					3 (60%)																	
DBM 1013	ENGINEERING MATHEMATICS 1	60%	40%	2 (10%)	1 (15%)												4 (20%)	2 (15%)													
DBS 1012	ENGINEERING SCIENCE	60%	40%	1 (5%)	1 (15%)										4 (30%)	2 (10%)															
DCB 1012	CONSTRUCTION & MATERIALS	50%	50%	2 (5%)	2 (15%)	2 (20%)	1 (10%)																								
DCB 1022	BUILDING SERVICES DRAWING	100%			2 (40%)		1 (GSA)												8 (60%)												
DCB 1032	ENVIRONMENTAL SCIENCE	50%	50%	2 (5%)	2 (15%)	2 (20%)	1 (10%) 1 (GSA)																								

COURSE CODE	COURSE	MODE		ASSESSMENT TASKS FOR COURSEWORK (CA)																										
		CA	FE	QUIZ	TEST / THEORY TEST	END OF CHAPTER	PRESENTATION	E-FOLIO	GROUP DISCUSSION / DISCUSSION	WRITTEN TASK (RESUME + COVER LETTER)	MOCK INTERVIEW	LISTENING TEST	ROLE PLAY	CASE STUDY	LAB WORK	THEORETICAL EXERCISE	TUTORIAL EXERCISE	ASSIGNMENT	PRACTICAL DRAWING	UJIAN AMALI	PROJECT	PRACTICAL EXERCISES	PRACTICAL WORK	PRACRICAL REPORT	ESSAY WRITING	PROJECT REPORT	PROPOSAL	WEEKLY PROGRESS WORK (LOG BOOK)	TUNJUKCARA	PRAKTIKAL
SEMESTER 2																														
DUA 2012	SAINS ,TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM*	100%		2 (20%)				1 (30%)												1 (20%)	1 (30%)								
DUB 2012	NILAI MASYARAKAT MALAYSIA **	100%		2 (20%)				1 (30%)													2 (50%)								
DRS 2XX1	SUKAN	100%																											1 (40%)	1 (60%)
DRB 2XX1	UNIT BERUNIFORM 1	100%																											1 (40%)	1 (60%)
DPB 2012	ENTREPRENEURSHIP	100%		2 (10%)	1 (15%)		1 - GSA (20%)							1 (5%)							1 - GSA (50%)								
DBM 2013	ENGINEERING MATHEMATICS 2	60%	40%	2 (10%)	1 (15%)												3 (15%)	2 (20%)												
DCB 2042	CADD FOR BUILDING SERVICES	100%			2 (40%)																	8 (60%) 1 (GSA)								
DCB 2052	BUILDING SERVICES PRACTICAL 1	100%																					12 (70%) 1 (GSA)	12 (30%)						
DCB 2062	ELECTRICAL SERVICES 1	50%	50%	2 (5%)	2 (15%)	2 (20%)																			1 (10%) 1 (GSA)					
DCB 2072	PLUMBING SERVICES	50%	50%	2 (5%)	2 (15%)	2 (20%)	1 (10%) 1 (GSA)																							

COURSE CODE	COURSE	MODE		ASSESSMENT TASKS FOR COURSEWORK (CA)																											
		CA	FE	QUIZ	TEST / THEORY TEST	END OF CHAPTER	PRESENTATION	E-FOLIO	GROUP DISCUSSION / DISCUSSION	WRITTEN TASK (RESUME + COVER LETTER)	MOCK INTERVIEW	LISTENING TEST	ROLE PLAY	CASE STUDY	LAB WORK	THEORETICAL EXERCISE	TUTORIAL EXERCISE	ASSIGNMENT	PRACTICAL DRAWING	UJIAN AMALI	PROJECT	PRACTICAL EXERCISES	PRACTICAL WORK	PRACRICAL REPORT	ESSAY WRITING	PROJECT REPORT	PROPOSAL	WEEKLY PROGRESS WORK (LOG BOOK)	TUNJUKCARA	PRAKTIKAL
SEMESTER 3																															
DUE 3012	COMMUNICATIVE ENGLISH 2	100%			1 (20%)		1 (30%) 1 (GSA)					1 (10%)	1 (20%)					1 (20%)												
DRK 3XX2	KELAB / PERSATUAN	100%																			1 (70%)								1 (30%)	
DRB 3XX2	UNIT BERUNIFORM 2	100%																			1 (70%)								1 (30%)	
DBM 3013	ENGINEERING MATHEMATICS 3	60%	40%	2 (10%)	1 (15%)												4 (20%)	2 (15%)												
DCB 3082	BUILDING SERVICES PRACTICAL 2	100%																					12 (70%) 1 (GSA)	12 (30%)						
DCB 3092	ELECTRICAL SERVICES 2	50%	50%	2 (5%)	2 (15%)	1 (10%)											2 (20%)													
DCB 3102	HYDRAULICS	50%	50%	2 (5%)	2 (15%)	2 (20%)																			1 (10%) 1 (GSA)					
DCB 3113	VENTILATION AND AIR CONDITIONING	50%	50%	2 (5%)	2 (15%)	2 (20%)			1 (GSA)																1 (10%)					

COURSE CODE	COURSE	MODE		ASSESSMENT TASKS FOR COURSEWORK (CA)																								
		CA	FE	QUIZ	TEST / THEORY TEST	END OF CHAPTER	PRESENTATION	E-FOLIO	GROUP DISCUSSION / DISCUSSION	WRITTEN TASK (RESUME + COVER LETTER)	MOCK INTERVIEW	LISTENING TEST	ROLE PLAY	CASE STUDY	LAB WORK	THEORETICAL EXERCISE	TUTORIAL EXERCISE	ASSIGNMENT	PRACTICAL DRAWING	UJIAN AMALI	PROJECT	PRACTICAL EXERCISES	PRACTICAL WORK	PRACRICAL REPORT	PRACRICAL TEST	ESSAY WRITING	PROJECT REPORT	PROPOSAL	WEEKLY PROGRESS WORK (LOG BOOK)
SEMESTER 4																												
DUE 5012	COMMUNICATIVE ENGLISH 3	100%			1 (20%)		1 (30%)			1 (10%) + 1 (10%)	1 (30%)																	
DCB 5122	BUILDING SERVICES PRACTICAL 3	100%																					10 (70%) 1 (GSA)	10 (30%)				
DCB 5132	FIRE PROTECTION SYSTEM	50%	50%	2 (5%)	2 (15%)	1 (15%)	1 (5%)							1 (10%)														
DCB 5142	BUILDING SERVICES CONTROL SYSTEM	50%	50%	2 (5%)	2 (15%)	2 (20%)																				1 (10%)		
DCB 5152	LIGHTING	50%	50%	2 (5%)	2 (15%)	1 (10%)											2 (20%)											
DCB 5163	AIR CONDITIONING SYSTEM	50%	50%	2 (5%)	2 (15%)	2 (20%)			1 (GSA)																	1 (10%)		
DCB 5171	PROJECT 1	100%					1 (20%)																				1 (40%)	1 (20%)	1 (20%)
SEMESTER 4 (ELECTIVE)																												
DCB 5182	INTRODUCTION TO STRUCTURE	50%	50%	2 (5%)	2 (15%)	3 (30%)																						
DCC 2052	INTRODUCTION TO INDUSTRILISED BUILDING SYSTEM (IBS)	100%		1 (10%)	2 (40%)		1 (GSA)							1 (30%)									1 (20%) 1 (GSA)					
DCB 2012	COMPUTER APPLICATION	100%													6 (60%)						1 (20%)				1 (20%)			

COURSE CODE	COURSE	MODE		ASSESSMENT TASKS FOR COURSEWORK (CA)																								
		CA	FE	QUIZ	TEST / THEORY TEST	END OF CHAPTER	PRESENTATION	E-FOLIO	GROUP DISCUSSION / DISCUSSION	WRITTEN TASK (RESUME + COVER LETTER)	MOCK INTERVIEW	LISTENING TEST	ROLE PLAY	CASE STUDY	LAB WORK	THEORETICAL EXERCISE	TUTORIAL EXERCISE	ASSIGNMENT	PRACTICAL DRAWING	UJIAN AMALI	PROJECT	PRACTICAL EXERCISES	PRACTICAL WORK	PRACRICAL REPORT	ESSAY WRITING	PROJECT REPORT	PROPOSAL	WEEKLY PROGRESS WORK (LOG BOOK)
SEMESTER 5																												
DUA 6022	KOMUNIKASI DAN PENYIARAN ISLAM	100%		2 (20%)			1 (20%)	1 (30%)													1 (30%)							
DCB 6194	PROJECT 2	100%																			1 (40%) 1 (GSA)					1 (30%) 1 (GSA)		1 (30%)
DCB 6202	CONTRACT & ESTIMATING FOR BUILDING SERVICES	50%	50%	2 (5%)	2 (15%)	2 (20%)	1 (10%) 1 (GSA)																					
DCB 6212	BUILDING MAINTENANCE MANAGEMENT	50%	50%	2 (10%)	2 (20%)	1 (5%)								2 (15%) 1 (GSA)														
DCB 6223	BUILDING SERVICES DESIGN	100%					1 (30%)																			7 (70%) 1 (GSA)		
DCB 6232	BUILDING TRANSPORTATION	50%	50%	2 (5%)	2 (15%)	1 (20%)	1 (10%) 1 (GSA)																					
SEMESTER 5 (ELECTIVE)																												
DCB 6242	SUPERVISORY MANAGEMENT	100%		2 (10%)	2 (40%)		1 (10%)														1 (40%) 1 (GSA)							
DCB 6252	ACOUSTICS	50%	50%	2 (5%)	2 (15%)	2 (20%)																			1 (10%) 1 (GSA)			

COURSE CODE	COURSE	MODE		ASSESSMENT TASKS FOR COURSEWORK (CA)											
		CA	FE	QUIZ	TEST	ORAL TEST	FINAL TEST	UJIAN LISAN	UJIAN BERTULIS	ROLE PLAY	WRITTEN TASK	PRACTICAL TASK	INDIVIDUAL ORAL PRESENTATION	LISTENING TEST	CREATIVE PERFORMANCE
SEMESTER 5 (Foreign Language) - ELECTIVE															
DUF 1012	BAHASA ARAB 1	100%		2 (20%)				1 (30%)	1 (30%)	1 (20%)					
DUF 1022	MANDARIN 1	100%		2 (30%)		1 (25%)	1 (30%)				1 (15%)				
DUF 1032	JAPANESE 1	100%		2 (20%)	2 (40%)					1 (30%)		1 (10%)			
DUF 1042	FRENCH 1	100%		2 (30%)	1 (20%)					1 (30%)			1 (20%)		
DUF 1052	SPANISH 1	100%		2 (30%)						1 (30%)			1 (20%)	1 (20%)	
DUF 1062	GERMAN 1	100%		1 (20%)			1 (30%)						1 (30%)	1 (20%)	1 (GSA)

COURSE CODE	COURSE	MODE		ASSESSMENT TASKS FOR COURSEWORK (CA)				
				INSTITUTION EVALUATION			INDUSTRY EVALUATION	
		CA	FE	Report on Industrial Training	Presentation	Observation	Reflective Journal	Practical Task
SEMESTER 6								
DUT 40110	INDUSTRIAL TRAINING	100%		20%	10%	10%	20%	40%

Courses **WITH** Final Examination = 21 courses

Courses **WITHOUT** Final Examination = 18 courses

Quotes

"Never lose hope, because it is the key to achieve all your dreams."

"Stop dreaming and start doing."

"Struggle that you do today is the single way to build a better future."

"You do not need to be great to start something. Do it now and do not ever put off because the chance may not come twice."

"Do your best at every opportunity that you have."

"Work hard when you do not have what you want."

"Too many think just make you afraid to pass your life."

"You are the creator for your own future."

"Your greatest strength is the courage to try and also the courage to fail."

"Ongoing complaints are the signs that you are the smaller person than the problem you have. Stop complaining and start doing!"

Head of Programme
Diploma in Building Services Engineering
Civil Engineering Department
Sultan Azlan Shah Polytechnic
35950 Behrang Perak
Tel: 05-4544 431
Fax: 05-4544 993
www.psas.edu.my

POLITEKNIK SULTAN AZLAN SHAH
KEMENTERIAN PENDIDIKAN MALAYSIA
BEHRANG STESEN
35950 BEHRANG
PERAK, MALAYSIA

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