



KEMENTERIAN
PENDIDIKAN
MALAYSIA

POLITEKNIK
MALAYSIA
SULTAN HAJI AHMAD SHAH

STUDENT **GUIDE BOOK**

DIPLOMA IN CIVIL ENGINEERING

DKA

CIVIL ENGINEERING DEPARTMENT

Diploma in Civil Engineering provides knowledge, skills and attitude to adapt to new technology in civil engineering. This program provides theory as well as carry out practical work. This program also offers courses in Civil Engineering fields such as Engineering Graphics, Water & Water Resources Engineering, Environment, Strength & Structural Design, Road & Transportation, Engineering Management and Geotechnics.

POLITEKNIK SULTAN HAJI AHMAD SHAH

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STUDENT PROGRAMME GUIDE CIVIL ENGINEERING DEPARTMENT

DKA: DIPLOMA IN CIVIL ENGINEERING

DGU: DIPLOMA IN GEOMATIC

DSB: DIPLOMA IN ARCHITECTURE

CIVIL ENGINEERING DEPARTMENT

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1.0 OVERVIEW OF THE INSTITUTION

POLISAS or Kuantan Polytechnic as it was formerly known was established in 1976 temporarily sharing the Kuantan Technical Institute premises in Alor Akar. It was relocated its present 75 hectare campus in 1983 and was officially opened by His Majesty DYMM Sultan of Pahang on the 9th November 1985. On October 16, 2002 the 27.2 hectare Maktab Perguruan Tengku Ampuan Afzan Campus was given to POLISAS as the later was relocated to Kuala Lipis. This has resulted in the tremendous increase in student population from 120 in 1976 to more than 6,000 in 2010.

POLISAS was established with the objective of producing semi-professionals in various fields namely Civil Engineering, Mechanical Engineering, Electrical Engineering, Commerce and Food Technology to support the development of Malaysia. Since its inception, POLISAS has produced about 33,000 graduates in various fields of expertise.

Currently a total of 14 diploma courses are being offered by the 5 departments in POLISAS. POLISAS also offers part time courses to promote Life Long Learning among polytechnic graduates with certificate qualification, a chance to pursue their diploma.

In line with the Polytechnic Transformation Plan, POLISAS has upgraded its facilities to provide conducive learning environment to the students. POLISAS also aims to achieve Excellent Academic Performance by providing excellent quality in education. This is proven when it was awarded the Quality Management System (QMS) and MS ISO 9001:2015.



Polytechnics Sultan Haji Ahmad Shah

Our Vision

To be the Leading-Edge TVET Institution

Our Mission

- i. To provide wide access to quality and accredited TVET programmes.
- ii. To empower the community through lifelong learning.
- iii. To develop holistic, entrepreneurial and balanced graduates.
- iv. To capitalise on smart partnership with stakeholders

Client's Charter

With full determination and a sense of responsibility, POLISAS promises to ensure:

1. The providing of semi-professional service meets the standard stated in the Quality Policy
2. A conducive learning environmental is met
3. An effective and competitive administration system to produce committed staff and well-rounded graduates
4. Certification is awarded within the stipulated timeframe and requirements
5. Semi-professional manpower is developed based on technology in line with me nation's vision.

2.0 INTRODUCTION TO THE DEPARTMENT OF CIVIL ENGINEERING

Civil Engineering Department is one of the 7 departments in POLISAS. This Department is headed by Miss Radziah binti Hashim, assisted by 3 Head of Programs which are Civil Engineering, Architecture and Geomatic. There are 105 lecturers and 3 support staff in this department. All programs offered in Civil Engineering Department comprise of student understanding in the latest theories in construction, architecture, land survey and also the practical aspects of applying the latest technology in the stipulated field of study.

With the aim to produce engineering technician qualification, Engineering Technology Accreditation Council (ETAC) is the body delegated by BEM for accreditation. The objective of accreditation is to ensure the graduates satisfy the minimum academic and practical requirements for registration as engineering technicians/inspector of works with the Board of Engineers Malaysia (BEM). In addition, the objective of accreditation is to ensure that Continual Quality Improvement (CQI) is being practiced by Institutions of Higher Learning (IHLs), and accreditation may also serve as a tool to benchmark engineering technician education programmes offered by IHLs in Malaysia.

3.0 INTRODUCTION DIPLOMA IN CIVIL ENGINEERING (DKA)

Diploma in Civil Engineering provides knowledge, skills and attitude to adapt to new technology in civil engineering with the ability to demonstrate professionalism and work ethics in fulfilling responsibilities towards the creator, client and society. This program provides theory as well as carry out practical work. This program also offers courses in Civil Engineering fields such as Engineering Graphics, Water & Water Resources Engineering, Environment, Strength & Structural Design, Road & Transportation, Engineering Management and Geotechnics. This program is specially designed with hands-on training in addition to the theoretical learning in civil engineering. Students are required to complete the industrial training to prepare them as graduates for employment in different sectors of the industry whereby the skills and knowledge acquired are used throughout modern industry. They will be able to use appropriate communication and interpersonal skills to perform tasks in various situations. Graduates will demonstrate the desired behavioural traits like integrity, team work, problem solving and passion in performing tasks related to their area of specialization. They will possess entrepreneurial skills to contribute to the economic growth for the nation's development in the construction industries. With these additional skills, they will be more competitive in the present job market.

4.0 SYNOPSIS

This programme is designed to equip students with sound knowledge, skills, attitude and understanding of the environment, construction industries, construction designs and infrastructural development of civil engineering. The knowledge and skills acquired will be useful for success in future or current employment.

5.0 EDUCATIONAL GOAL

To produce holistic and competent TVET graduates capable of contributing to the national development

6.0 PROGRAMME AIMS

This programme believes that all individuals have potential to be proactive and responsible senior technicians to support national agenda in transforming construction industry to be highly productive, environmentally sustainable with globally competitive players while focused on safety and quality standards.

7.0 ENTRY REQUIREMENTS

The general minimum requirement for student entry:

- 1) Malaysian
- 2) Passed “Sijil Pelajaran Malaysia” (SPM) or equivalent qualification with minimum requirement as follow:
 - Passed Bahasa Melayu
 - Passed English
 - Passed Sejarah (for SPM 2013 onwards)
 - Passed THREE (3) subject with minimum Grade C
 - ✓ Maths / Add Maths
 - ✓ ONE (1) Science / Technical / Vocational
 - ✓ ONE (1) any other subject
- 3) Candidates are not colour blind and physically handicapped that will complicate practical assignments.

8.0 JOB PROSPECTS

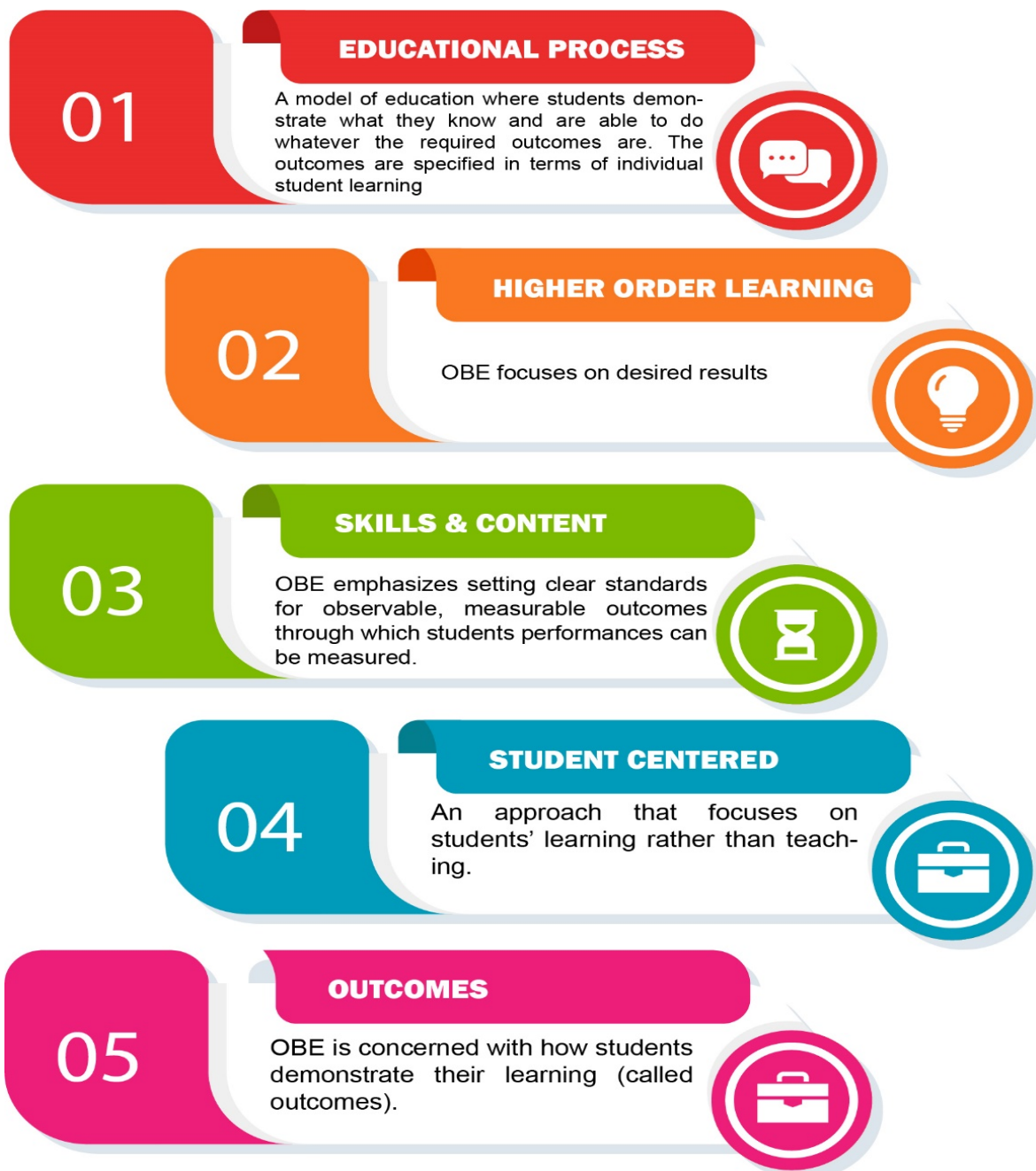
The knowledge and skills that the students acquire from the program will enable them to participate in the job market such as specified as:

- 1) Technical Assistant
- 2) Site Supervisor
- 3) Inspector of Work
- 4) Assistant Engineer
- 5) Contractor
- 6) Health and Safety Officer
- 7) Research Assistant
- 8) Quality Control Assistant Engineer
- 9) Material Coordinator
- 10) Entrepreneur

9.0 OUTCOME-BASED EDUCATION (OBE)

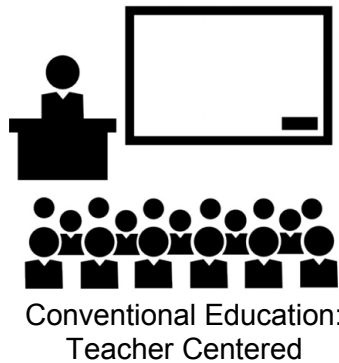
Outcome-Based Education means clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This means starting with a clear picture of what is important for students to be able to do, then organizing the curriculum, instruction and assessment to make sure this learning ultimately happens “(Spady 1994, 1)

What is OBE?



Why OBE?

1. Transformation in education

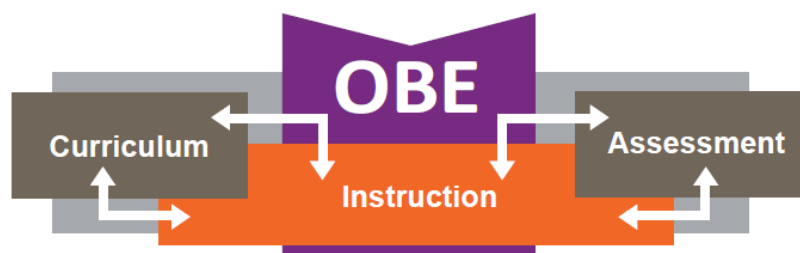


2. Learning Role

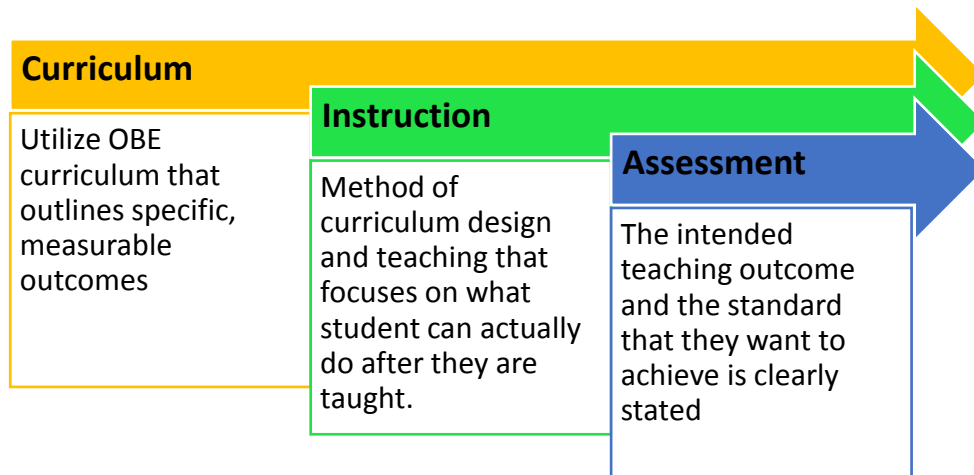


ELEMENTS	TEACHER-CENTERED	STUDENT-CENTERED
Knowledge	Transmitted from instruction	Constructed by students
Student Participation	Passive	Active
Role of Lecture	Leader/Authority	Facilitator/Partner in Learning
Role of Assessment	Few Test, Mainly for Grading	Many Tests, for Ongoing Feedback
Emphasis	Learning Correct Answers	Developing Deeper Understanding
Assessment Method	One-Dimensional testing	Multidimensional testing
Academic Culture	Competitive, Individualistic	Collaborative, Supportive

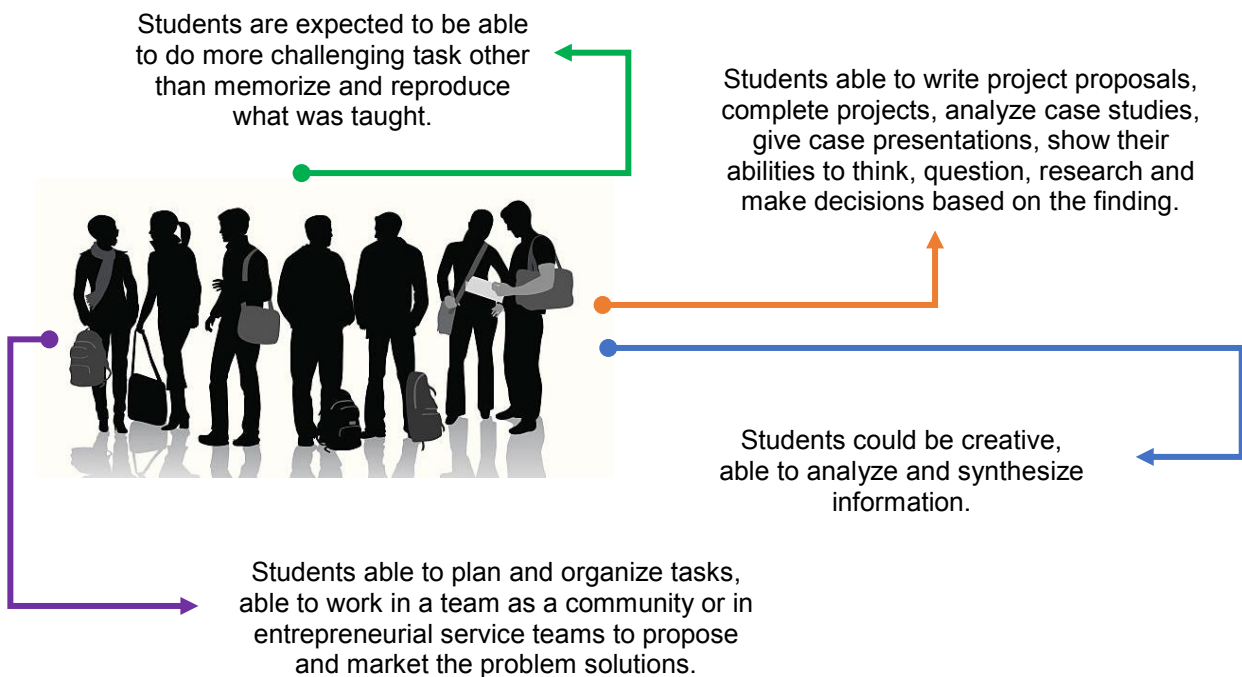
3. The element of OBE



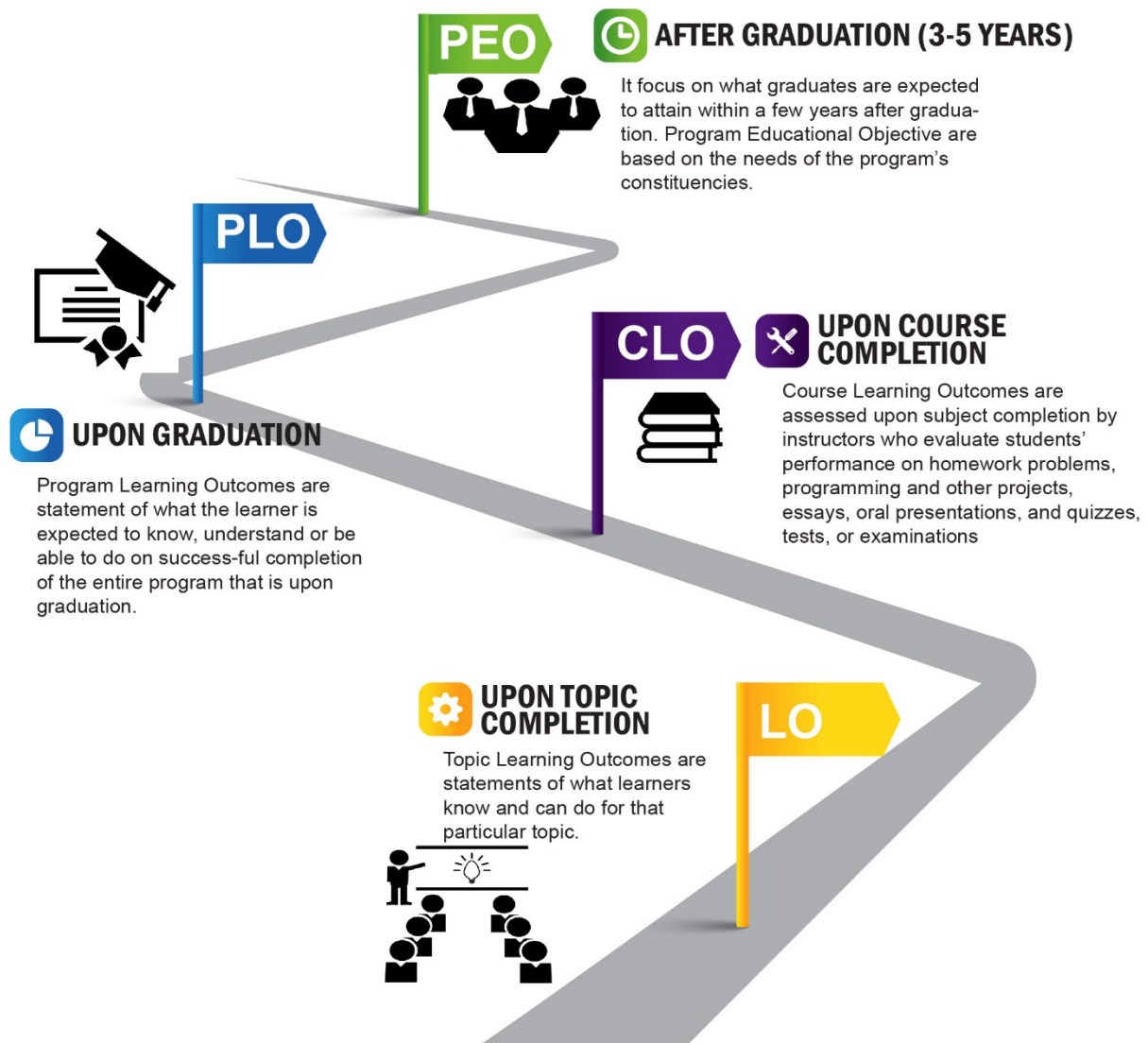
4. Constructive Element Process



5. The OBE impact

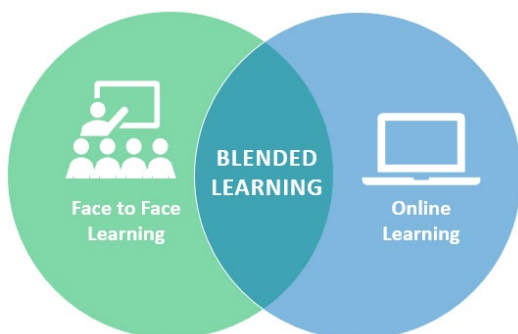


6. Level of OBE



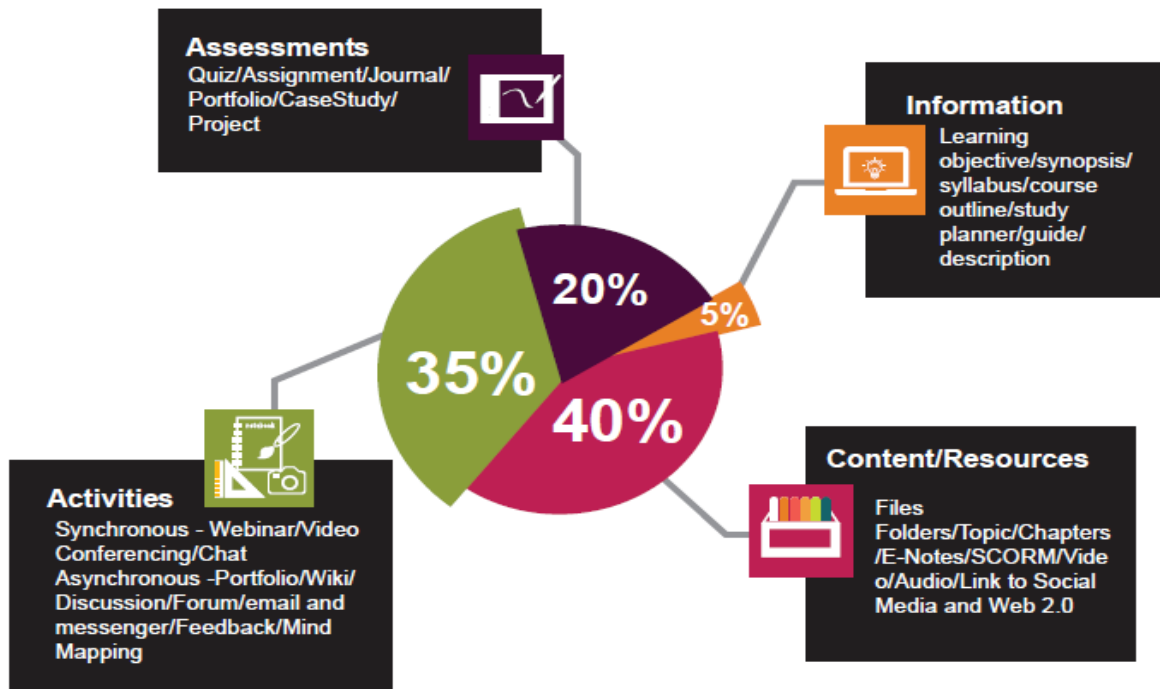
10.0 BLENDED LEARNING

1. Introduction

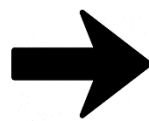
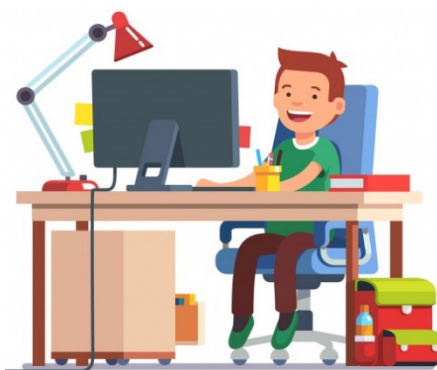


This teaching and learning method integrates a mixture of online mode and onsite mode of learning with a weightage of 30% - 60% course and activity content which is managed online. These teaching approach either facilitates or replace the face to face contact learning.

2. Blended learning content



3. Polytechnic e-Learning Portal



<http://portal.cidos.edu.my>

DIPLOMA IN CIVIL ENGINEERING
(DKA)

11.1 PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Diploma in Civil Engineering programme shall produced semi professionals who are:

- PEO 1 : working in the field of civil engineering
- PEO 2 : lead or a team member to support their role in industries
- PEO 3 : engaged in activities to enhance knowledge or starting/embark their own enterprise
- PEO 4 : fulfil professional and communities responsibilities, conforming to ethical and environmental values

11.2 PROGRAMME LEARNING OUTCOMES (PLO)

Upon completion of the programme, students should be able to:

PLO1 :	apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices
PLO2 :	identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity (DK1 to DK4)
PLO3 :	design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations (DK5)
PLO4 :	conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements
PLO5 :	apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations (DK6)
PLO6 :	demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems (DK7)
PLO7 :	understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts (DK7)
PLO8 :	understand and commit to professional ethics and responsibilities and norms of technician practice
PLO9 :	function effectively as an individual, and as a member in diverse technical teams
PLO10:	communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend

	the work of others, document their own work, and give and receive clear instructions
PLO11:	demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments
PLO12:	recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge

Notes:

<i>DK 1 :</i>	<i>A descriptive, formula-based understanding of the natural sciences applicable in a sub-discipline</i>
<i>DK 2 :</i>	<i>Procedural mathematics, numerical analysis, statistics applicable in a subdiscipline</i>
<i>DK 3 :</i>	<i>A coherent procedural formulation of engineering fundamentals required in an accepted sub-discipline</i>
<i>DK 4 :</i>	<i>Engineering specialist knowledge that provides the body of knowledge for an accepted sub-discipline</i>
<i>DK 5 :</i>	<i>Knowledge that supports engineering design based on the techniques and procedures of a practice area</i>
<i>DK 6 :</i>	<i>Codified practical engineering knowledge in recognised practice area</i>
<i>DK 7 :</i>	<i>Knowledge of issues and approaches in engineering technician practice: ethics, financial, cultural, environmental and sustainability impacts</i>

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

	PROGRAMME LEARNING OUTCOME (PLO)	PROGRAMME EDUCATION OBJECTIVE (PEO)			
		PEO1	PEO2	PEO3	PEO4
PLO1	apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices;	/			
PLO2	identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity (DK1 to DK4)		/		
PLO3	design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations (DK5)		/		
PLO4	conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements		/		
PLO5	apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations (DK6)	/			
PLO6	demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems (DK7)				/
PLO7	understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts (DK7)				/
PLO8	understand and commit to professional ethics and responsibilities and norms of technician practice				/
PLO9	function effectively as an individual, and as a member in diverse technical teams		/		
PLO10	communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions		/		
PLO11	demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments			/	
PLO12	recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge			/	

11.4 PROGRAMME STRUCTURE (MATRIX OF COURSES VS PROGRAMME LEARNING OUTCOMES (PLO))

CLASSIFICATION	COURSE CODE	COURSE NAME	CONTACT HOURS				PROGRAMME LEARNING OUTCOME (PLO)												PRE REQUISITE / CO-REQUISITE
			L	P	T	O	CREDIT VALUES												
							PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	
							Knowledge	Problem analysis	Design/development of solutions	Investigation	Modern Tool Usage	The Engineer and Society	Environment & Sustainability	Ethics	Individual and Team Work	Communications	Project Management and Finance	Life Long Learning	
CLS1	CLS2	CLS2	CLS3a	CLS3b	CLS5	CLS5	CLS3d	CLS3b	CLS4	CLS4									
SEMESTER 1																			
Compulsory	MPU21032	Penghayatan Etika dan Peradaban	1	0	2	0	2								√			√	
	DUE10012	Communicative English 1	1	0	2	0	2									√		√	
	MPU24XX1	Sukan ***	0	2	0	0	1									√		√	
	MPU24XX1	Unit Beruniform 1 ***																	
Common Core	DUW10022	Occupational, Safety & Health for Engineering	2	0	0	0	2	√							√		√		
	DBS10012	Engineering Science	2	1	0	0	2	√			√								
	DBM10013	Engineering Mathematics 1	2	0	2	0	3	√			√						√		
Discipline Core	DCC10012	Engineering Drawing & CAD	0	4	0	0	2				√						√		
	DCC10022	Brickworks and Concrete Laboratory	0	3	0	0	2				√					√			
	DCC10032	Civil Engineering Material	2	0	0	0	2	√									√	√	
TOTAL			26				18												
SEMESTER 2																			
Compulsory	MPU23052	Sains, Teknologi dan Kejuruteraan Dalam Islam*	1	0	2	0	2								√			√	
	MPU23042	Nilai Masyarakat Malaysia**																√	
	MPU24XX1	Kelab/Persatuan ***	0	2	0	0	1									√		√	
	MPU24XX1	Unit Beruniform 2																	
Common Core	DBM20023	Engineering Mathematics 2	2	0	2	0	3	√				√					√	DBM10013	
Discipline Core	DCC20042	Plumbing and Carpentry Workshop	0	3	0	0	2				√				√				
	DCC20053	Mechanic of Civil Engineering Structure	3	0	1	0	3	√	√								√		
	DCC20063	Engineering Survey	2	3	0	0	3	√			√					√			
	DCC20073	Contract and Estimating	3	0	1	0	3	√	√							√		√	
TOTAL			25				17												
SEMESTER 3																			
Compulsory	DUE30022	Communicative English 2	1	0	2	0	2									√	√		DUE10012
	MPU22012	Entrepreneurship	1	0	2	0	2									√	√		
Discipline Core	DCC30082	Industrialised Building System (IBS) in Sustainable Construction	0	4	0	0	2				√				√			√	
	DCC30093	Geotechnical Engineering	3	0	1	0	3	√	√		√						√		
	DCC30103	Highway and Traffic Engineering	3	0	1	0	3	√		√							√		
	DCC30112	Geotechnical and Highway Engineering Laboratory	0	3	0	0	2				√	√		√					
	DCC30122	Fluids Mechanics	2	0	1	0	2	√	√									√	
TOTAL			24				16												

CLASSIFICATION	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)												PRE REQUISITE / CO-REQUISITE
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	
								Knowledge	Problem analysis	Design/ development of solutions	Investigation	Modern Tool Usage	The Engineer and Society	Environment & Sustainability	Ethics	Individual and Team Work	Communications	Project Management and Finance	Life Long Learning	
CL.S1	CL.S2	CL.S2	CL.S3a	CL.S3c	CL.S3b	CL.S5	CL.S5	CL.S3d	CL.S3b	CL.S4	CL.S4									
SEMESTER 4																				
Compulsory	DUE50032	Communicative English 3	1	0	2	0	2										√	√	DUE30022	
Discipline Core	DCC40132	Project Management and Practices	2	1	0	0	2	√				√						√		
	DCC40142	Steel Structure Design	2	0	1	0	2		√	√				√					DCC20053	
	DCC40152	Water Supply and Waste Water Engineering	2	0	1	0	2	√					√			√				
	DCC40163	Theory of Structures	3	0	1	0	3	√	√										DCC20053	
	DCC40172	Structure, Hydraulics and water Quality Laboratory	0	3	0	0	2			√	√	√								
	DCC40181	Civil Engineering Project 1	0	2	0	0	1			√							√	√	√	
Electives		Electives 1	0	4	0	0	2													
TOTAL			25				16													
SEMESTER 5																				
Discipline Core	DCC50194	Civil Engineering Project 2	0	8	0	0	4				√	√					√		DCC40181	
	DCC50203	Reinforced Concrete Design	3	0	1	0	3		√	√				√						
	DCC50212	Hydrology	2	0	1	0	2	√	√				√							
	DCC50222	Hydraulics	2	0	1	0	2	√	√						√				DCC30122	
	DCC50232	Engineering in Society	2	0	0	0	2					√		√					√	
Electives		Electives 2	2	0	0	0	2													
TOTAL			22				15													
SEMESTER 6																				
Industrial Training	DUT600610	Engineering Industrial Training	0	0	0	0	10				√				√	√	√	√	√	
TOTAL			0				10													
TOTAL CREDIT VALUE							92													

ELECTIVES COURSES																			
1	DCC50242	Building Information Modeling (BIM)	0	4	0	0	2				√				√			√	
2	DCC50252	Building Services	2	0	0	0	2			√			√		√				
3	DCC50262	Environmental Pollution and Control	2	0	0	0	2			√			√		√				

FREE ELECTIVES																			
1	DUD10012	Design Thinking	1	0	0	1	2	√										√	

	Total Credit	%
i. (a) Compulsory	14	15
(b) Compulsory (Bahasa Kebangsaan A) ^b	2 ^b	0
ii. Common Core	10	11
iii. Discipline Core	54	59

iv. Specialization	0	0
Total Credit	78	
v. Elective	4	4
(b) Free Electives ^a	2 ^a	0
vi. Industrial Training	10	11
Grand Total Credit	92	100

Engineering & Engineering Technology Courses	Total Hours	%
i. Lecture	38	41
ii. Practical	38	41
iii. Tutorial	17	18
Total Contact Hours	93	100

Legend:

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

^aFor Muslim Students

^{**}For Non-Muslim Students

Notes:

1. The minimum and maximum credit value of Electives must be referred to the programme standard or professional bodies.
2. ^a**Free Electives** are courses which are not included in any programme structure but if taken, will contribute towards students' CGPA, provided that institutions adhere to the Jabatan Pendidikan Politeknik & Kolej Komuniti Free Electives Guidelines.
3. ^b**MPU22042 Bahasa Kebangsaan A** is **COMPULSORY** for students who did not attain credit in Bahasa Melayu at Sijil Pelajaran Malaysia (SPM) level and will contribute to students' CGPA.
4. Co-curriculum pathways:
 - a. Path 1 : Sport and Club
 - b. Path 2 : Uniform Unit (Students are required to **PASS** Uniform Unit 1 as a prerequisite to Uniform Unit 2)
5. Clusters:
 - a. CLS1 : Knowledge & Understanding
 - b. CLS2 : Cognitive Skills
 - c. CLS3a : Practical Skills
 - d. CLS3b : Interpersonal & Communication Skills
 - e. CLS3c : Digital & Numeracy Skills
 - f. CLS3d : Leadership, Autonomy & Responsibility
 - g. CLS4 : Personal & Entrepreneurial Skills
 - h. CLS5 : Ethics & Professionalism

11.5 PROGRAMME STRUCTURE

COMPONENTS	COURSE CODE	COURSE	CONTACT HOURS			CREDIT HOURS
			L	P	T	
SEMESTER 1						
Compulsory	MPU21032	Penghayatan Etika dan Peradaban	1	0	2	2
	DUE10012	Communicative English 1	1	0	2	2
	MPU24XX1	Sukan***	0	2	0	0
	MPU24XX1	Unit Beruniform 1***				
Common Core	DUW10022	Occupational, Safety and Health	2	0	0	2
	DBM10013	Engineering Mathematics 1	2	0	2	3
	DBS10012	Engineering Science	2	1	0	2
Discipline Core	DCC10012	Engineering Drawing And CAD	0	4	0	2
	DCC10032	Civil Engineering Materials	3	0	0	3
	DCC10022	Brickworks and Concrete Laboratory	0	3	0	2
		Total	26			18
SEMESTER 2						
Compulsory	MPU23052	Sains, Teknologi dan Kejuruteraan Dalam Islam *	1	0	2	2
	MPU23042	Nilai Masyarakat Malaysia **				
	MPU24XX1	Kelab/Persatuan ***	0	2	0	1
	MPU24XX1	Unit Beruniform 2				
Common Core	DBM20023	Engineering Mathematics 2	2	0	2	3
Discipline Core	DCC20042	Plumbing and Carpentry Workshop	0	3	0	2
	DCC20053	Mechanic of Civil Engineering Structure	3	0	1	3
	DCC20063	Engineering Survey	2	3	0	3
	DCC20073	Contract and Estimating	3	0	1	3
		Total	25			17
SEMESTER 3						
Compulsory	DUE30022	Communicative English 2	1	0	2	2
	MPU22012	Entrepreneurship	0	4	0	2
Discipline Core	DCC30082	Industrialised Building System (IBS) in Sustainable Construction	0	4	0	2
	DCC30093	Geotechnical Engineering	3	0	1	3
	DCC30103	Highway and Traffic Engineering	3	0	1	3
	DCC30112	Geotechnical and Highway Engineering Laboratory	0	3	0	2
	DCC30122	Fluids Mechanics	2	0	1	2
		Total	24			16

COMPONENTS	COURSE CODE	COURSE	CONTACT HOURS			CREDIT HOURS
			L	P	T	
SEMESTER 4						
Compulsory	DUE50032	Communicative English 3	1	0	2	2
Discipline Core	DCC40132	Project Management and Practices	2	1	0	2
	DCC40142	Steel Structure Design	2	0	1	2
	DCC40152	Water Supply and Waste Water Engineering	2	0	1	2
	DCC40163	Theory of Structures	3	0	1	3
	DCC40172	Structure, Hydraulics and water Quality Laboratory	0	3	0	2
	DCC40181	Civil Engineering Project 1	0	4	0	1
Electives	DCC50242	Building Information Modelling (BIM)	0	4	0	2
		Total	25			16
SEMESTER 5						
Discipline Core	DCC50194	Civil Engineering Project 2	0	8	0	4
	DCC50203	Reinforced Concrete Design	3	0	1	3
	DCC50212	Hydrology	2	0	1	2
	DCC50222	Hydraulics	2	0	1	2
	DCC50232	Engineering in Society	2	0	0	2
Electives	DCC50252	Building Services	2	0	0	2
	DCC50262	Environmental Pollution and Control				
		Total	22			15
SEMESTER 6						
Industrial Training	DUT600610	Engineering Industrial Training	0	0	0	10
		Total	0			10
TOTAL CREDIT VALUE						92

11.6 COURSE SYNOPSIS

SEMESTER 1

COURSE	SYNOPSIS
MPU21032 PENGHAYATAN ETIKA DAN PERADABAN	PENGHAYATAN ETIKA DAN PERADABAN ini menjelaskan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenal pasti sistem, tahap perkembangan, kemajuan dan kebudayaan merentas bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, perbincangan dan perbahasan berkaitan isu-isu kontemporari dalam aspek ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban dapat melahirkan pelajar yang bermoral dan profesional. Penerapan amalan pendidikan berimpak tinggi (HIEPs) yang bersesuaian digunakan dalam penyampaian kursus ini.
DUE110012 COMMUNICATIVE ENGLISH 1	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.
MPU24XX1 ASAS UNIT BERUNIFORM/ SUKAN	ASAS UNIT BERUNIFORM memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif. SUKAN memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.
DUW10022 OCCUPATIONAL SAFETY AND HEALTH	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.
DBS10012 ENGINEERING SCIENCE	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.
DBM10032 ENGINEERING MATHEMATICS 1	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.
DCC10012 ENGINEERING DRAWING AND CAD	ENGINEERING DRAWING AND COMPUTER AIDED DRAFTING covers the basic manual drafting of technical drawing to enhance engineering student ability to communicate ideas in modern technology industry. It provides a platform for student to interpret engineering drawings, use CAD and develop their skills in technical sketching.

	Student should be able to produce engineering drawing using manual graphics sketching and CAD software related to IR4.0.
DCC10022 BRICKWORKS AND CONCRETE LABORATORY	BRICKWORKS AND CONCRETE LABORATORY covers a basic concept of practical works and principles regarding the brickworks and concrete works including the safety exposure in workshop. This course emphasizes the related brick laying using mortar mixing 1:3 and student needed to complete a selected mini project. As for concrete works the method of statement for concrete which referred is BS1881. The cement to be used throughout the work shall be Portland cement obtained from an approved manufacturers that comply with MS 522. Fine and coarse aggregates shall comply with MS 29. All testing specification were referred by MS EN 206. This course also need students to participate actively in teamwork during the practical activities.
DCC10032 CIVIL ENGINEERING MATERIAL	CIVIL ENGINEERING MATERIAL course is designed to equip students with a comprehensive knowledge and skills related to construction materials used in civil engineering. It will emphasize on types and function of cement, the function of aggregates in concrete, water, admixtures, properties of fresh and hardened concrete, concrete mix design, and manufacturing concrete on site. This course also focuses on the properties of timber, types and characteristics of brick and concrete block, steel and nonsteel, the types and function of building finishes materials and the introduction to building elements.

SEMESTER 2

COURSE	SYNOPSIS
MPU23052 SAINS TEKNOLOGI DAN KEJURUTERAAN ISLAM	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.
MPU23042 NILAI MASYARAKAT MALAYSIA	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.
MPU24XX1 KELAB/ PERSATUAN	Merujuk silibus asas kelab/persatuan yang ditawarkan mengikut Politeknik.
MPU24XX1 UNIT BERUNIFORM 2	UNIT BERUNIFORM 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.
DBM20023 ENGINEERING MATHEMATICS 2	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.

<p>DCC20042 PLUMBING AND CARPENTRY WORKSHOP</p>	<p>PLUMBING AND CARPENTRY WORKSHOP covers basic practical works of plumbing and carpentry works. This course emphasizes the related materials used and active participation of student to produce simple project.</p>
<p>DCC20053 MECHANICS OF CIVIL ENGINEERING STRUCTURE</p>	<p>MECHANICS OF STRUCTURES covers knowledge of facts and basic principles of types of forces, strength of materials and behavior of loaded structures. This course provides exposure to the impact of loaded structures on direct and shear stresses, slope and deflection. This exposure will be the pre requisite to understand other courses in Civil Engineering.</p>
<p>DCC20063 ENGINEERING SURVEY</p>	<p>ENGINEERING SURVEY 1 focus on the basic principles of levelling and total station traverse survey. This course emphasizes the basic distance measurement, bearing and angle in order to get the shape of terrain and the position on the field. It also gives knowledge and practical skills to students in operating and handling survey instruments, control survey, detail survey, data collection or acquisition, calculation and plotting of survey works. The course emphasis on the method used to carry out surveying works especially data collection or acquisition to produce plan based on the scope of work. It also gives exposure to the need for accurate data to be used for other surveying work.</p>
<p>DCC20073 CONTRACT AND ESTIMATING</p>	<p>CONTRACT AND ESTIMATING is a study of construction industry in general, tender procedure, contract procedure, preliminary estimating method, build-up rate and quantity measurement. The module emphasis on contract condition and to provide exposure to the students regarding the procedures and standard practice in the construction field based on Standard Form of Contract (P.W.D. Form 203/ 203A).</p>

SEMESTER 3

COURSE	SYNOPSIS
<p>DUE30022 COMMUNICATIVE ENGLISH 2</p>	<p>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.</p>
<p>MPU22012 ENTREPRENEURSHIP</p>	<p>ENTREPRENEURSHIP focuses on the fundamentals and concept of entrepreneurship in order to inculcate the value and interest in students to choose entrepreneurship as a career. This course can help students to initiate creative and innovative entrepreneurial ideas. It also emphasizes a preparation of a business plan framework through business model canvas.</p>
<p>DCC30082 INTRODUCTION TO INDUSTRIALISED BUILDING SYSTEM (IBS)</p>	<p>INTRODUCTION TO INDUSTRIALISED BUILDING SYSTEM (IBS) is designed to equip student the concept of Industrialised Building System (IBS) in conjunction with sustainability of the construction industry. This course teaches on elements such as Modular Coordination and IBS Score, site management and supervision and installation of IBS components. This course will also include practical work in assembling green system, supervision and quality checking in IBS construction and also installation of IBS in a small scale project pertaining to sustainable construction.</p>
<p>DCC30093 GEOTECHNICAL ENGINEERING</p>	<p>GEOTECHNICAL ENGINEERING covers basic knowledge of the process of soils and rock formation and the characteristics of soil. It also covers soil improvement works such as compaction, shear strength, seepage, slope stability, earth pressure and foundation.</p>

<p>DCC30103 HIGHWAY AND TRAFFIC ENGINEERING</p>	<p>HIGHWAY AND TRAFFIC ENGINEERING is a study on history of highway construction and the organization involved in Malaysia. This course also provides the students with the knowledge regarding the method and design involved in traffic engineering. This course emphasizes on introduction to highway and traffic, transportation planning, pavement materials, construction of flexible pavement, construction of rigid pavement, traffic control equipment and road furniture, flexible pavement design, junction design, traffic management and highway maintenance.</p>
<p>DCC30112 GEOTECHNICAL AND HIGHWAY LABORATORY</p>	<p>GEOTECHNICAL AND HIGHWAY LABORATORY covers knowledge in the form of practical through the experiments which are carried out based on the concepts and the theories learned in the class. The emphasis of the course is on the method of conducting experiments, analysis and understanding its relationship with theories learned. The course also focused on the geotechnical and highway which are the core of the civil engineering field.</p>

SEMESTER 4

COURSE	SYNOPSIS
<p>DUE50032 COMMUNICATIVE ENGLISH 3</p>	<p>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.</p>
<p>DCC40132 PROJECT MANAGEMENT AND PRACTICES</p>	<p>PROJECT MANAGEMENT AND PRACTICES focuses on the basic knowledge and understanding of project management. Students will be introduced to the definition and basic concept of project management and practices. . Every aspect in project management is explained starting from the overview of project management, the influences of organizational structures in project management, project lifecycle, resources in project management, planning and scheduling, project control and monitoring, safety control, environmental management plan and quality assurance in project management. The application of common software such as Microsoft Project for planning and scheduling also will be exposed to the student.</p>
<p>DCC40142 STEEL STRUCTURE DESIGN</p>	<p>STEEL STRUCTURE DESIGN covers fundamental concepts and basic principles required for design of steel structure including beam, column, roof truss and connections. This course enable student to develop understanding a basic knowledge related to the theoretical background for the design of steel structures and the practical expertise to translate this background knowledge into successfully performing actual design calculations according to Eurocode 3 (EC3) for a single storey steel building.</p>
<p>DCC40152 WATER SUPPLY & WASTE WATER ENGINEERING</p>	<p>WATER SUPPLY & WASTE WATER ENGINEERING is a study of water resources, water characteristics, usage and demand of water supply, raw water treatment process and water distribution system. This course also includes the information on the process in sewage treatment plant, sludge treatment and disposal. It also emphasize on the parameter of drinking water and effluent from sewage treatment plant.</p>

<p>DCC40163</p> <p>THEORY OF STRUCTURES</p>	<p>THEORY OF STRUCTURE covers basic knowledge of facts and principles in calculate the reactions, bending moments and shear forces for statically indeterminate beams and portal frame using the slope deflection method and moment distribution method. It also includes basic principles in calculation the forces in truss members using the equilibrium joint method and section method for the statically determinate and using unit load method for the statically indeterminate trusses.</p>
<p>DCC40172</p> <p>STRUCTURE, HYDRAULICS AND WATER QUALITY LABORATORY</p>	<p>STRUCTURE, HYDRAULICS & WATER QUALITY LABORATORY covers knowledge in the form of practical through the experiments which are carried out based on the concepts and the theories learned in the class. The emphasis of the course is on the method of conducting experiments, analysis and understanding its relationship with the theories learned. It comprises of three civil engineering laboratories. The structure, hydraulic and water quality laboratory which are the core of the civil engineering field.</p>
<p>DCC40181</p> <p>CIVIL ENGINEERING PROJECT 1</p>	<p>CIVIL ENGINEERING PROJECT 1 covers knowledge and display practice skills in civil engineering. The student also exposed in communication skills, group works, work planning, decision making, recommendation and creativity using available facilities.</p>
<p>DCC50242</p> <p>BUILDING INFORMATION MODELLING (BIM)</p>	<p>BUILDING INFORMATION MODELLING focuses on the designing and analysing building models using techniques, resources and BIM tools. Students will be introduced to building models using BIM process for architectural, structural and plumbing. It covers BIM coordination, clash detection and construction scheduling. This course is a project-based where students gain knowledge and skills on the implementation of BIM concepts from planning to design stage.</p>

SEMESTER 5

COURSE	SYNOPSIS
<p>DCC50194</p> <p>CIVIL ENGINEERING PROJECT 2</p>	<p>CIVIL ENGINEERING PROJECT 2 covers knowledge and skills in civil engineering practices. The student also exposed in communication skills, group works, work planning, decision making, recommendation and gain creativity by using related facilities to a design of a system. This course also covers conducting experiments in the laboratory/workshop, field works, academic researches, designing product or method of civil engineering related fields. The student will learn the method to analyze data, prepare presentation and report writing.</p>
<p>DCC50203</p> <p>REINFORCED CONCRETE DESIGN</p>	<p>REINFORCED CONCRETE DESIGN covers concepts and methods of design for reinforced concrete structures comprising beam, slab and column. This course emphasizes on knowledge and practice of producing double storey reinforced concrete building design starting from the layout plan, action & analysis, structural design and detailing according to Eurocode 2 (EC2).</p>
<p>DCC50212</p> <p>ENGINEERING HYDROLOGY</p>	<p>HYDROLOGY introduces students to the concepts of engineering hydrology including hydrologic cycle and rainfall-runoff processes. It covers the quantification of rainfall and runoff processes for engineering design, including computation of design rainfalls, peak discharges and hydrographs. The basic concept of Urban Drainage Design and compliance with local guideline of Urban Storm Water Management Manual for Malaysia (MSMA) are discuss and employ in considering sustainability environmental value.</p>

<p>DCC50222 HYDRAULICS</p>	<p>HYDRAULICS covers the application in hydrostatic and hydrodynamic fluids. This course involves discussion on hydrostatics concept and basic equations of stability and buoyancy. This course also emphasize on the application of constituents of pumps and open channel flow concept appropriately in solving hydraulics problem.</p>
<p>DCC50232 ENGINEERING IN SOCIETY</p>	<p>ENGINEERING IN SOCIETY focuses on the introduction to the role of engineers in the context of their employment in industry and their interaction with the wider community. In this course, students will be exposed to safety and health of the public, technology and development in industry of civil engineering. This course also covers the meaning and impacts of engineering in society, ethical decision making, professional codes of ethics and sustainable development in the context of science and engineering application locally and globally. The students will be able to display excellent teamwork skills for working in group projects and organizing the activities of engineering practice in the society.</p>
<p>DCC50262 ENVIRONMENTAL POLLUTION AND CONTROL</p>	<p>ENVIRONMENTAL POLLUTION AND CONTROL is a study on types and effects of communicable and non-communicable diseases to public health. It also emphasizes on the control and monitoring of pollution from water, air and noise and the effects to general health and environment. It also covers the knowledge on management of municipal solid waste and hazardous waste. The students are exposed to the Environmental Quality Act 1974 as the guidelines and procedures in managing environmental pollution..</p>
<p>DCC50252 BASIC BUILDING SERVICES</p>	<p>BASIC BUILDING SERVICES is a study on the basic concepts and the principles of the systems in a building. The course emphasizes on the electrical installation system, fire prevention system, building transportation system, air conditioning system, maintenance works, and the demolition works.</p>

SEMESTER 6

<p>COURSE</p>	<p>SYNOPSIS</p>
<p>DUT600610 ENGINEERING INDUSTRIAL TRAINING</p>	<p>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.</p>



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