



KEMENTERIAN PENDIDIKAN TINGGI  
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI



# HANDBOOK

## DIPLOMA IN CIVIL ENGINEERING

Civil Engineering Department





# Handbook

DIPLOMA IN CIVIL  
ENGINEERING

Siti Nadia Binti Muhammad Samsuddin  
Siti Farah Wahida Binti Mohamed



**POLITEKNIK SULTAN IDRIS SHAH  
KEMENTERIAN PENDIDIKAN TINGGI**

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Issue 2023**

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Cataloguing-in-Publication Data

Perpustakaan Negara Malaysia

A catalogue record for this book is available  
from the National Library of Malaysia

eISBN 978-967-2860-68-6

**Diterbitkan oleh:**

**Politeknik Sultan Idris Shah  
Sg. Lang, 45100 Sg Air Tawar,  
Selangor Darul Ehsan**

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# INTRODUCTION

## DIPLOMA IN CIVIL ENGINEERING



**Siti Farah Wahida  
Binti Mohamed**  
*"Head of the DKA Program"*

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 programme provides theory as well as carries out practical work.

This programme also offers courses in Civil Engineering area such as Engineering Graphics, Water & Water Resources Engineering, Environment, Strength & Structural Design, Road & Transportation, Engineering Management and Geotechnics. This programme is specially designed with hands-on training in addition to the theoretical learning in civil engineering. They are required to complete the industrial training to prepare graduates for employment in different sectors of the industry because 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 desired behavioural traits like integrity, team work, problem solving and passion in performing the 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.

# Program Industry Advisory Panels (IAP) :::::



**Dato' P.Geol. Hj. Amran Bin Mohamad**  
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# Program Industry Advisory Panels (IAP) :::::



**Dr. Muhd Norhasri Bin Muhd Sidek**

**(PENSYARAH KANAN)**

Institute of Infrastructure Engineering Sustainable and Management (IIESM),  
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**Prof. Madya Ts. Chm. Dr. Radin Maya Saphira Binti Radin Mohamed**

**(KETUA PUSAT)**

Micropollutant Research Centre,  
Fakulti Kejuruteraan Awam Dan Alam Bina,  
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86400 Parit Raja, Batu Pahat, Johor.



# Academic Staff :::::



**Siti Farah Wahida Binti  
Mohamed**  
KETUA PROGRAM DKA



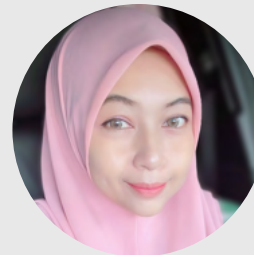
**Noorhadi Bin Jailani**  
PENOLONG KETUA  
PROGRAM DKA



**Chia Soi Lee**  
PPPT 52



**Ts. Chai Teck Jung**  
PPPT 52



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PPPT 48

# Academic Staff :::::



**Tuan Noor Rafidah  
Binti Tuan Hassan**  
PPPT 48



**Mohamad Fauzi  
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**Noor Aziyah  
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PPPT 48



**Siti Norzaemah  
Binti Mohd. Rashid**  
PPPT 48



**Haspina Binti  
Sulaiman**  
PPPT 48



**Hanizah Binti  
Osman**  
PPPT 48



**Mohd Rozaidi  
Bin Ismail**  
PPPT 48 (M)



**Rahayu Binti  
Hayat**  
PPPT 48 (M)



# Academic Staff :::::



**Herliana Binti Hassan**

PPPT 48(M)



**Seti Suhadaini Binti Mohammed**

PPPT 48(M)



**Muhammad Sadli Bin Abdullah**

PPPT 48 (M)



**Siti Nadia Binti Muhammad Samsuddin**

PPPT 48 (M)



**Suzielahyati Binti Yahya**

PPPT 48 (M)



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**Farah Deba Binti Ayeop Abdul Khalil**

PPPT 44



**Mohd Izuddin Bin Mahmood**

PPPT 44 (M)

# Academic Staff :::::



**Saifullizam Bin  
Abu Bakar**  
PPPT 42



**Siti Nurehan Binti  
Omar**  
PPPT 42



**Ibrahim Bin Mohd  
Zulkifli**  
PPPT 42



**Jamaliah Binti  
Jabar**  
PPPT 42 (M)



**Norasyikin Binti  
Yaakub**  
PPPT 42 (M)



**Maznah Kartini  
Binti Mansor**  
PPPT 44



**Mohd Shahril Bin  
Borhnnudin**  
PPPT 41



**Syakiroh Binti  
Mohamad Taufik**  
PPPT 41



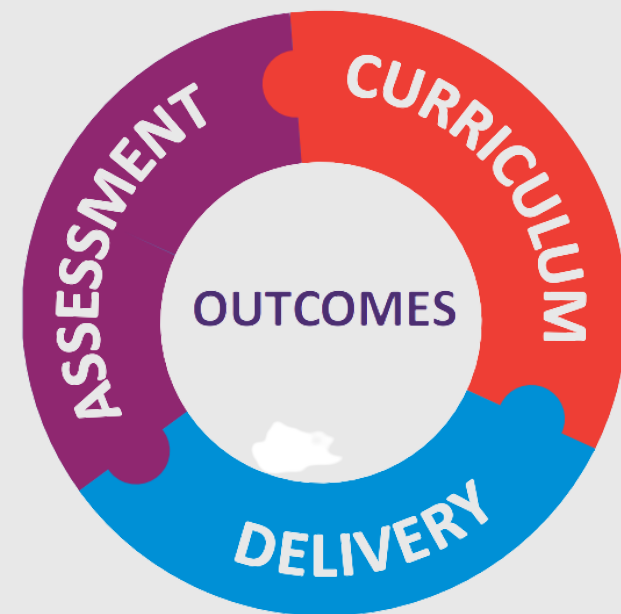
**Ahmad Zaiyad  
Bin Idrus**  
PPPT 41

# Outcome-Based Education (OBE)

## Introduction

OBE is an educational process that focuses on achieving the learning outcomes of each student with various student-centred methods (SCL). Learning outcomes refer to what students can demonstrate about their knowledge of the ability to do something and value after something has been taught. The OBE approach is more focused on the results that students will achieve at the end of learning and how they can apply their existing knowledge.

Spady (1994) has introduced the term Outcome-Based Education (OBE) to describe an educational system which focuses a clear set of learning outcomes. OBE is an educational model in which curriculum, delivery, and assessment are developed, structured and implemented to facilitate key student learning outcomes (Spady, 1994; Driscoll & Wood, 2007)



Outcome-Based Education, where intended learning outcomes inform curriculum, delivery, and assessment

## 4 Basic Principles of OBE

**01**

### Clarity of focus

To attain learning objectives, lecturers must be explicit about what they want students to know, comprehend, and be able to apply or show.

**03**

### High expectations

Teachers should establish high, challenging standards of performance in order to encourage students to engage deeply in what they are learning.

**02**

### Designing down

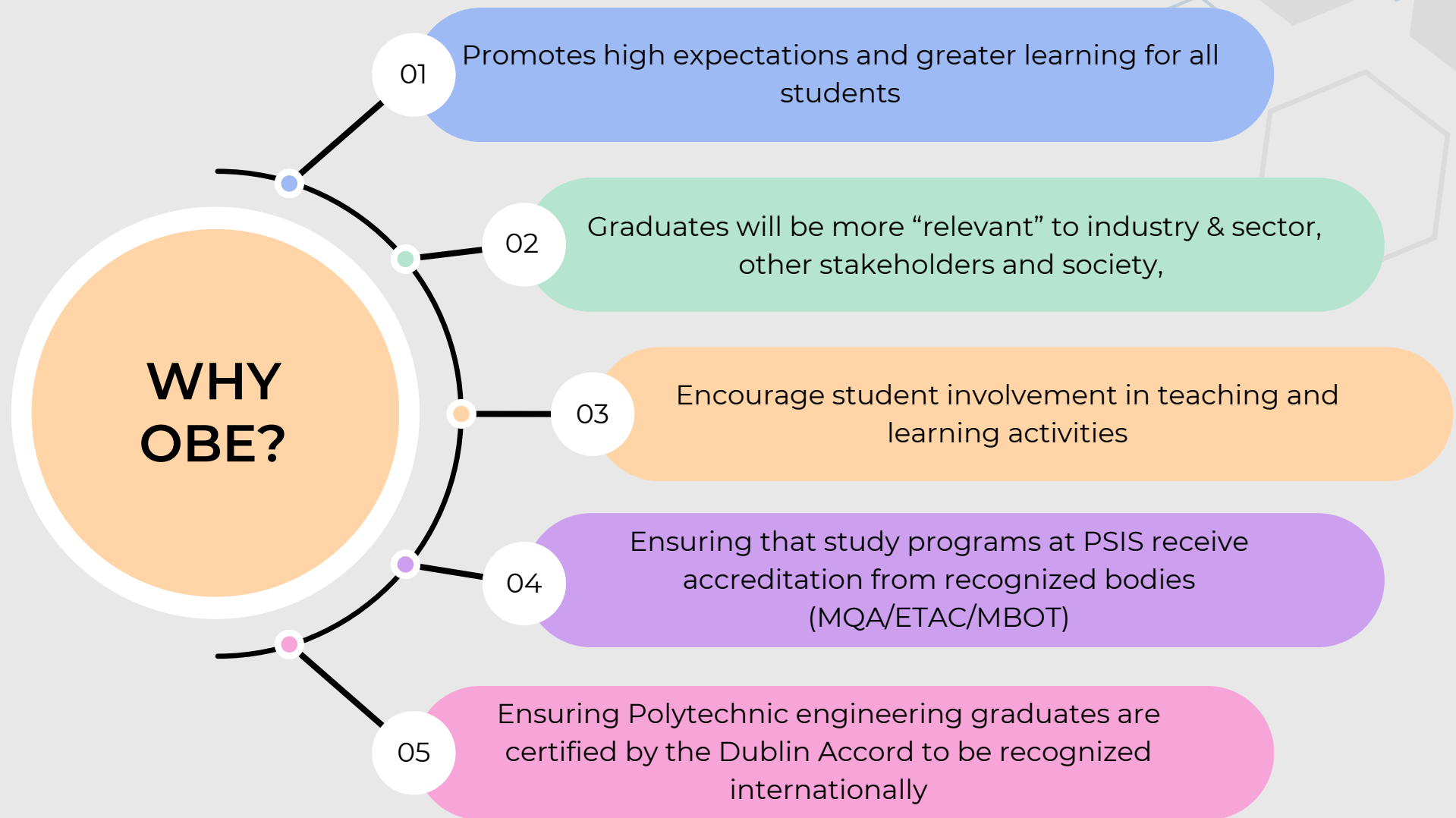
The learning objectives that students must achieve by the end of the programme must be distinctly defined before curriculum planning begins.

**04**

### Expanded opportunities

Provide a variety of learning opportunities that meet the needs and learning techniques of students. Not all students can learn the same things in the same way at the same time.

## Importance of OBE



## DELIVERY MODES OF OBE

.....

### 01

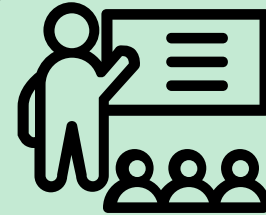
#### FACE TO FACE

Lecture  
Guest Speaker



### 02 ACTIVE LEARNING

Presentation  
Tutorial  
Seminar  
Colloquium



### 06

#### WORK-BASED LEARNING (WBL)

Practical  
Industrial Training  
Work Attachment  
Field Trip  
Site Visit

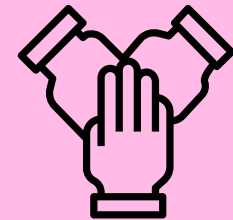


## DELIVERY MODES

### 03

#### COOPERATIVE LEARNING

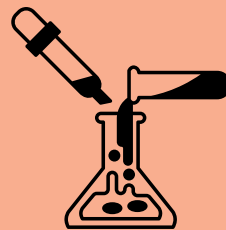
Problem-Based  
Case Study  
Project-Based



### 05

#### EXPERIENTIAL METHOD

Lab  
Demonstration  
workshop



### 04

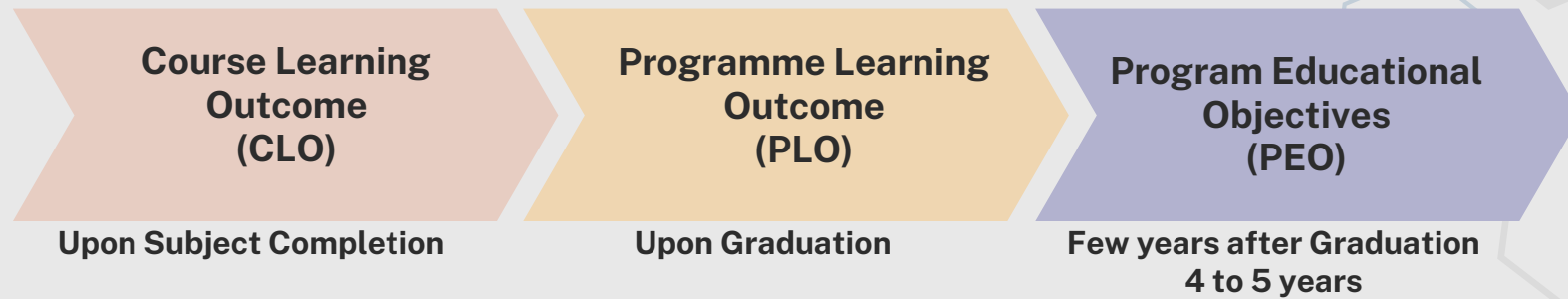
#### TECHNOLOGY-BASED DELIVERY

Online Learning  
Teleconference  
Simulation

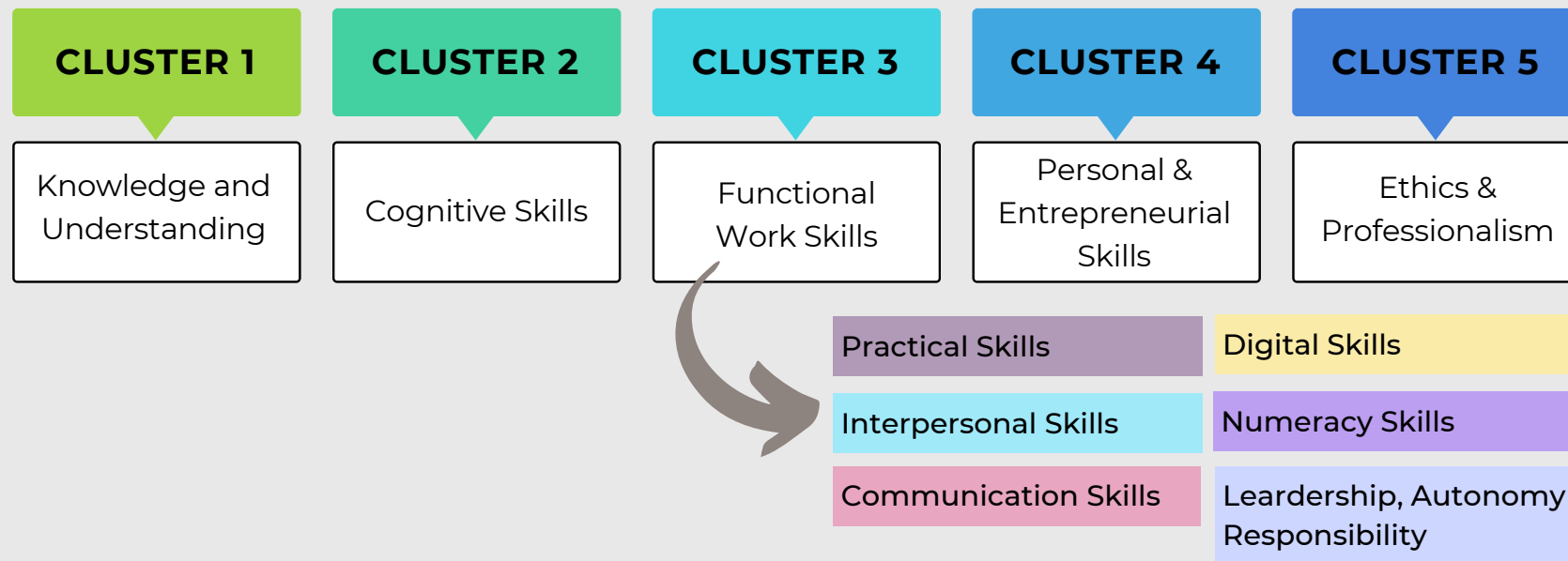




## LEVEL OF LEARNING OUTCOMES



## 5 CLUSTERS LEARNING OUTCOME (PLO)



# Programme Information

## 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.

## 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:

- 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

# About Program :::::

## VISION AND MISSION



### VISION

To be the Leading-Edge TVET Institution

### MISSION



- 01 To provide wide access to quality and recognized TVET programmes.
- 02 To empower communities through lifelong learning
- 03 To develop holistic, entrepreneurial and balanced graduates
- 04 To capitalise on smart partnership with stakeholders

# About Program :::::

## EDUCATIONAL GOAL AND PROGRAMME AIM



### GOAL

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



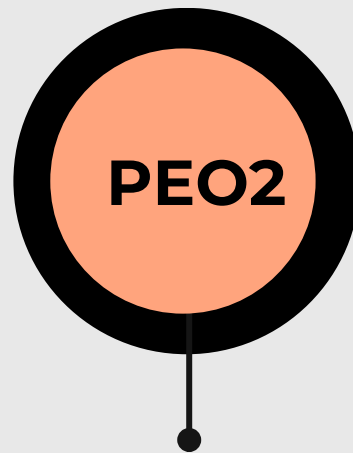
### AIM

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.

# Programme Education Objective (PEO) :::::



Working in the  
field of civil  
engineering



Lead or a team  
member to support  
their role in  
industries



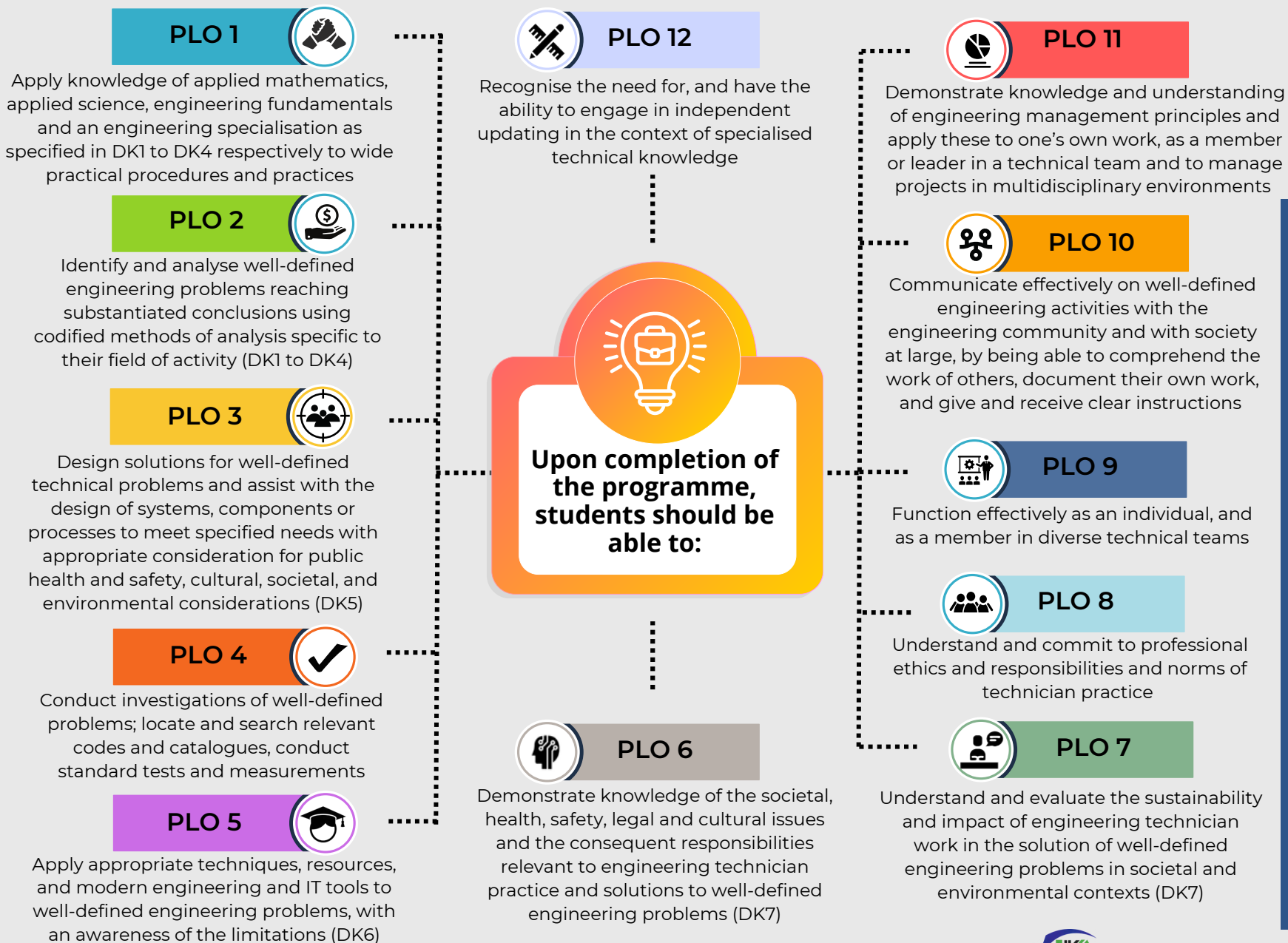
Engaged in  
activities to  
enhance knowledge  
or starting/embark  
their own enterprise



Fulfill professional and  
communities  
responsibilities,  
conforming to ethical  
and environmental  
values



# Programme Learning Outcome (PLO)



## Notes:

- DK1 A descriptive, formula-based understanding of the natural sciences applicable in a sub-discipline
- DK2 Procedural mathematics, numerical analysis, statistics applicable in a subdiscipline
- DK3 A coherent procedural formulation of engineering fundamentals required in an accepted sub-discipline
- DK4 Engineering specialist knowledge that provides the body of knowledge for an accepted sub-discipline
- DK5 Knowledge that supports engineering design based on the techniques and procedures of a practice area
- DK6 Codified practical engineering knowledge in recognised practice area.
- DK7 Knowledge of issues and approaches in engineering technician practice ethics, financial, cultural, environmental and sustainability impacts



# Matrix of Programme Learning Outcome (PLO) vs Programme Educational Objective (PEO)

PROGRAMME LEARNING OUTCOME (PLO)		PROGRAMME EDUCATIONAL OBJECTIVE (PEO)			
		PEO1	PEO2	PEO3	PEO4
<b>PLO1</b>	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;	✓			
<b>PLO2</b>	identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity (DK1 to DK4);		✓		
<b>PLO3</b>	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);		✓		
<b>PLO4</b>	conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements;		✓		
<b>PLO5</b>	Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations (DK6);	✓			
<b>PLO6</b>	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);				✓
<b>PLO7</b>	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);				✓
<b>PLO8</b>	understand and commit to professional ethics and responsibilities and norms of technician practice;				✓
<b>PLO9</b>	function effectively as an individual, and as a member in diverse technical teams;		✓		
<b>PLO10</b>	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;		✓		
<b>PLO11</b>	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;			✓	
<b>PLO12</b>	recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge;			✓	

# Programme Structure :::::

## SEMESTER 1

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 Solution	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								
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		2	✓				✓									
	DBM10013	Engineering Mathematics 1	2	0	2	0	3	✓					✓					✓			
Discipline Core	DCC10012	Engineering Drawing and Computer Aided Drafting (CAD)	0	4	0	0	2						✓					✓			
	DCC10022	Brickworks and Concrete Laboratory	0	3	0	0	2						✓				✓				
	DCC10032	Civil Engineering Materials	2	0	0	0	2	✓										✓		✓	
TOTAL			26				18														

# Programme Structure :::::

## SEMESTER 2

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 Solution	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								
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	
	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	Mechanics 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														

# Programme Structure :: :: :: :: ::

## SEMESTER 3

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 Solution	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								
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														

# Programme Structure :: :: :: :: ::

## SEMESTER 4

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 Solution	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								
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	1	0	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	Final Year Project 1	0	2	0	0	1				✓							✓	✓	✓	
Electives		Electives 1	0	4	0	0	2														
			25				16														

# Programme Structure :::::

## SEMESTER 5

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 Solution	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								
Discipline Core	DCC50194	Final Year 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														
			22				15														



# Programme Structure :: :: :: :: ::

## SEMESTER 6

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 Solution	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
Industrial Training	DUT600610	Industrial Training	0	0	0	0	10															
			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 <sup>a</sup>																				
1	DUD10012	Design Thinking	1	0	0	1	2		✓											

# Course Description

## SEMESTER 1

### 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.

### DUE10012 Communicative English 1

COMMUNICATIVE ENGLISH 1 focuses on developing students speaking skills to enable them 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. The students are equipped with effective presentation skills as a preparation for academic and work purposes.

CLO1 Membentangkan konsep etika dan peradaban dalam kepelbagaian tamadun.  
(A2, CLS 5)

CLO2 Menerangkan sistem, tahap perkembangan, kesepaduan sosial dan kebudayaan merentas bangsa di Malaysia.  
(A2, CLS 5)

CLO3 Mencadangkan sikap yang positif terhadap isu dan cabaran kontemporari dari perspektif etika dan peradaban.  
(A3, CLS 4)

#### KAEDAH PENTAKSIRAN KERJA KURSUS

Pembentangan	e-Folio	Projek
30%	30%	40%

CLO1 Participate in a discussion using effective communication and social skills to reach an amicable conclusion by accommodating different views and opinions  
(A3, CLA 3b)

CLO2 Demonstrate awareness of values and opinions embedded in texts on current issues.  
(A3, CLS 3b)

CLO3 Present a topic of interest that carries identifiable values coherently using effective verbal and nonverbal communication skills.  
(A2, CLS 4)

#### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Group Discussion	Test	Assignment	Oral Presentation
20%	20%	30%	30%

# Course Description

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## **DUW10022 Occupational, Safety & Health for Engineering**

OCCUPATIONAL SAFETY AND HEALTH FOR ENGINEERING 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 workers in implementing and complying with the safety procedures at work. Understanding of notifications of accidents, dangerous occurrence, poisoning and diseases and liability for offences will be imparted upon students. This course will also provide an understanding of the key issues in OSH Management, Incident Prevention, Fire Safety, Hazard Identification Risk Control and Risk Assessment (HIRARC), Workplace Environment and Ergonomics and guide the students gradually into this multi-disciplinary science.

## **DBS10012 Engineering Science**

ENGINEERING SCIENCE course introduces the physical concepts required in engineering disciplines. Students will learn the knowledge of fundamental physics in order to identify and solve engineering physics problems. Students will be able to perform experiments and activities to mastery physics concepts.

CLO1 Explain briefly Occupational Safety and Health (OSH) procedures, regulation and its compliance in Malaysia.  
(C2, PLO1)

CLO2 Initiates incident, hazards, risks and safe work practices in order to maintain health and safe work environment  
(A3, PLO8)

CLO3 Demonstrate communication skill in group to explain the factor that can lead to accident in workplace.  
(A3, PLO10)

CLO1 Use basic physics concept to solve engineering physics problems.  
(C3, CLS1)

CLO2 Apply knowledge of fundamental physics in activities to mastery physics concept.  
(C3, CLS 1)

CLO3 Perform appropriate activities related to physics concept.  
(P3, CLS 3a)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Theory Test	Quiz	Case Study 1	Case Study 2	Presentation
25%	15%	20%	20%	20%

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Lab Work	Mini Projek
20%	15%	25%

# Course Description

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## DBM10013 Engineering Mathematics 1

ENGINEERING MATHEMATICS 1 exposes students to the basic algebra including resolve partial fractions. This course also covers the concept of trigonometry and the method to solve trigonometry problems by using basic identities, compound angle and double angle formulae. Students will be introduced to the theory of complex number and concept of vector and scalar. Students will explore advanced matrices involving 3x3 matrix.

- CLO1 Use mathematical statement to describe relationship between various physical phenomena. (C3, CLS1)
- CLO2 Show mathematical solutions using the appropriate techniques in mathematics. (C3, CLS 3c)
- CLO3 Use mathematical expression in describing real engineering problems precisely, concisely and logically. (A3, CLS 3b)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Quiz	Test	Presentation	End of Chapter
10%	15%	15%	20%

## DCC10012 Engineering Drawing and Computer Aided Drafting (CAD)

ENGINEERING DRAWING & COMPUTER AIDED DRAFTING (CAD) 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

- CLO1 Display ability to produce basic engineering drawing appropriate tool and equipment correctly. (P3, PLO5)
- CLO2 Build 2D plan in engineering drawing appropriately. (P4, PLO5)
- CLO3 Present an understanding of drawing process in mini project presentation verbally. (A3, PLO10)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Laboratory Assignment	Practical Test	Presentation	Mini Project
20%	20%	30%	30%

# Course Description

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## 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.

- CLO1 Perform practical activities using appropriate tools and techniques for concrete works with safety awareness (P3, PLO 5)
- CLO2 Complete a selected mini project on brickworks through group participation (P5, PLO 5)
- CLO3 Participate actively in a teamwork during practical activities (A3, PLO 9)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT	
Workshop Practical	Project
50%	50%

## DCC10032 Civil Engineering Materials

CIVIL ENGINEERING MATERIALS 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.

- CLO1 Apply fundamental concept and behaviour of different types of material in civil engineering construction. (C3, PLO1)
- CLO2 Present orally the use of construction materials in a particular project using visual aids appropriately. (A2, PLO10)
- CLO3 Display the ability to search various resources about current construction materials to the assigned topics. (C2, PLO12)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Test	Quiz	Assignment	Presentation
20%	10%	10%	10%

# Course Description

## SEMESTER 2

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### **MPU23052** **Sains,** **Teknologi dan** **Kejuruteraan** **Dalam 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, nilai-nilai agama, adat resam dan budaya masyarakat di Malaysia. Selain itu, pelajar dapat mempelajari tanggungjawab sebagai individu dan nilai perpaduan dalam kehidupan di samping cabaran- cabaran dalam membentuk masyarakat Malaysia

- CLO1 Melaksanakan dengan yakin amalan Islam dalam kehidupan seharian  
( A2 , CLS 4 )
- CLO2 Menerangkan etika dan profesionalisme berkaitan sains teknologi dan kejuruteraan dalam Islam  
( A3 , CLS 5 )
- CLO3 Menghubungkait minda ingin tahu dengan prinsip syariah, etika dan kaedah fiqh dalam bidang sains, teknologi dan kejuruteraan menurut perspektif Islam.  
( A4 , CLS 4 )

- CLO1 Membincangkan sejarah dan nilai dalam pembentukan masyarakat di Malaysia.  
( A2 , CLS 4 )
- CLO2 Menerangkan etika dan profesionalisme terhadap konsep perpaduan bagi meningkatkan semangat patriotisme masyarakat Malaysia  
( A3 , CLS 5 )
- CLO3 Menghubungkait minda ingin tahu dengan cabarancabaran dalam membentuk masyarakat Malaysia  
( A4 , CLS 4 )

#### KAEDAH PENTAKSIRAN UNTUK KERJA KURSUS

Tunjukcara	Pembentangan	e-folio	Tugasan Berdasarkan Masalah
20%	20%	30%	30%

#### KAEDAH PENTAKSIRAN UNTUK KERJA KURSUS

Perbincangan	Pembentangan	e-folio	Tugasan Berdasarkan Masalah
20%	20%	30%	30%

# Course Description

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## DBM20023 Engineering Mathematics 2

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

- CLO1 Use algebra and calculus knowledge to describe relationship between various physical phenomena.  
(C3, CLS 1)
- CLO2 Solve the mathematical problems by using appropriate and relevant fundamental calculus techniques.  
(C3, CLS 3c)
- CLO3 Use mathematical language to express mathematical ideas and arguments precisely, concisely and logically in calculus.  
(A3, CLS 3b)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Quiz	Test	End of Chapter	Presentation
10%	15%	20%	15%

## DCC20042 Plumbing and Carpentry Workshop

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.

- CLO1 Assemble appropriate tools and techniques for plumbing works with safety awareness.  
(P3, PLO5)
- CLO2 Complete a mini project for carpentry works within a given time frame.  
(P5, PLO5)
- CLO3 Participate actively in a teamwork during practical activities.  
(A3, PLO9)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Practical Test	Project
50%	50%

# Course Description

## DCC20053 Mechanics of Civil Engineering Structure

MECHANICS OF CIVIL ENGINEERING 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.

- CLO1 Apply the fundamental knowledge and principles of mechanic structure in civil engineering (C3, PLO1)
- CLO2 Analyze structure behavior in determinate structure based on the problem given. (C4, PLO2)
- CLO3 Construct the diagram related to stress and deflection of determinate beam. (P3, PLO10)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT		
Test	Quiz	Assignment
20%	10%	20%

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## DCC20063 Engineering Survey

ENGINEERING SURVEY 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.

- CLO1 Apply correctly the fundamental principles and practices of surveying work. (C3, PLO 1)
- CLO2 Perform Civil Engineering Survey works using appropriate instrument based on standard procedure and current surveying instrument. (P3 , PLO 5)
- CLO3 Initiate positive leadership and team work by contributing actively in groups during fieldwork that yield valid results. (A3, PLO 9)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT				
Test	Quiz	Field Work	Individual Report	Practical Test
30%	15%	30%	20%	10%



# Course Description

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## SEMESTER 3

### DCC20073 Contract and Estimating

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 emphasises on contract condition and 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)

- CLO1 Explain the fundamental concepts of construction industry in general, tender procedure and contract procedure in Malaysia (C3, PLO 1)
- CLO2 Estimate the cost of construction project by using preliminary estimating method, build-up rate method and quantity measurement (C4, PLO 2)
- CLO3 Describe the understanding of the professional engineering ethics and practice based on Standard Form of Contract (P.W.D Form 203/203A) efficiently. (A3, PLO 8)
- CLO4 Perform efficient management of time and resources through quantity measurement and build-up rate in accordance with Public Work Department Practice. (A5, PLO 11)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Test	Quiz	Assignment	Project
20%	5%	10%	15%

### DUE30022 Communicative English 2

COMMUNICATIVE ENGLISH 2 emphasises the skills required at the workplace to describe products or services as well as processes or procedures. This course will also enable student to make and reply to enquiries and complaint.

- CLO1 Describe products or services effectively by highlighting its features and characteristics that appeal to a specific audience. (A3, CLS 3b)
- CLO2 Describe processes, procedures and instruction clearly by highlighting information of concern. (A3, CLS 4)
- CLO3 Demonstrate effective communicative and social skills in handling enquiries and complaints amicably and professionally. (A3, CLS 3b)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Oral Presentation	Test	Assignment	Role Play
30%	20%	20%	30%

# Course Description

## MPU22012 Entrepreneurship

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.

- CLO1 Propose the value proposition of entrepreneurial idea using Business model Canvas.  
(A3, CLS3b)
- CLO2 Develop a viable business plan by organizing business objectives according to priorities.  
(A4, CLS4)
- CLO3 Organise the online presence business in social media marketing platform.  
(A3, CLS4)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT		
Product Pitching	Business Plan Presentation	Online Business Report
35%	30%	35%

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## DCC30082 Industrialised Building System (IBS) in Sustainable Construction

IBS IN SUSTAINABLE CONSTRUCTION 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.

- CLO1 Assemble suitable green materials and Industrialised Building System (IBS) components with supervision  
(P3, PLO5)
- CLO2 Construct green system and IBS component with compliance to measurement of Modular Coordination and IBS Score  
(P4, PLO5)
- CLO3 Demonstrate punctuality and responsibility in completing task of assembling green system and IBS.  
(A3, PLO8)
- CLO4 Organize time and resources efficiently in site management.  
(A5, PLO 11)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT		
Practical Work	Mini Project	Presentation
40%	40%	20%

# Course Description

## DCC30093 Geotechnical Engineering

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.

- CLO1 Apply fundamental of engineering properties of soils in civil engineering works.  
(C3, PLO1)
- CLO2 Analyze geotechnical engineering problems using appropriate method in determination of safety, stable earthworks and geotechnical structures.  
(C4, PLO2)
- CLO3 Analyze data to reach conclusion on assigned topic of case study.  
(C4, PLO4)
- CLO4 Explain verbally in formal presentation based on assign topic.  
(A3, PLO10)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Test	Case Study	Assignment	Presentation
20%	15%	10%	5%

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## DCC30103 Highway and Traffic Engineering

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, 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.

- CLO1 Apply appropriate model to solve problem in highway and traffic engineering.  
(C3, PLO 1)
- CLO2 Assesses design performance for highway and traffic engineering based on appropriate specification with consideration of public safety, society and environment  
(C5, PLO3)
- CLO3 Explain the findings of a case study/assign topic in a formal presentation.  
(A3, PLO 10)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Test	Assignment	Case Study	Presentation
20%	10%	10%	10%

# Course Description

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## DCC30112 Geotechnical and Highway Engineering Laboratory

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.

- CLO1 construct appropriate instrumentation/ measurement techniques/ models/ simulation in geotechnical and highway engineering using standard procedure and equipment.  
(P3, PLO5)
- CLO2 practices the importance of achieving safety in geotechnical and highway according to OSH standard.  
(A4, PLO6)
- CLO3 analyse laboratory result in achieving objective of geotechnical and highway using engineering report standard.  
(C4, PLO4)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT		
Laboratory Report	Laboratory Safety	Laboratory Practical
30%	10%	60%

## DCC30122 Fluids Mechanics

FLUID MECHANICS covers the behaviour and characteristics of engineering fluid and their application in hydrostatic and hydrodynamic fluid. This course involves discussion on fluid properties, fluid flow concept and basic equations, moving fluid forces, dimensional analysis, flow in closed conduits and pipe network, and momentum equations.

- CLO1 explain the fundamental and principles in fluid mechanics engineering.  
(C2, PLO1)
- CLO2 determine the principles of fluid mechanics engineering in pipe flow appropriately.  
(C4, PLO2)
- CLO3 describe verbally the fundamental and principles in fluid mechanics engineering.  
(A3, PLO10)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Quiz	Assignment	Presentation
20%	5%	20%	5%

# Course Description

## SEMESTER 4

### DUE50032 Communicative English 3

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.

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### DCC40132 Project Management and Practices

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.

CLO1 Present gathered data in graphs and form effectively using appropriate language forms and functions.  
(A2, CLS 3b)

CLO2 Prepare a high impact resume and cover letter, highlighting competencies and strengths that meet employer's expectation.  
(A4, CLS 4)

CLO3 Demonstrate effective communication and social skills in handling job interviews confidently. (A3, CLS 3b)

CLO1 Apply correctly the fundamental engineering concepts of project management.  
(C3, PLO1)

CLO2 Manipulate appropriate techniques and software tool for planning and scheduling related to civil engineering activities.  
(P3, PLO5)

CLO3 Perform efficient management of time and resources in civil engineering field.  
(A2, PLO11)

#### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Presentation	Written Task		Mock Interview
		Resume	Cover Letter	
15%	20%	15%	15%	35%

#### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Quiz	Assignment	Mini Project
15%	5%	10%	20%

# Course Description

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## DCC40142 Steel Structure Design

STEEL STRUCTURE DESIGN covers the fundamental concepts and basic principles required to design steel structures including beam, column, roof truss and connections. This course enables student to develop understanding 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

CLO1 Design single storey building for steel structure correctly according to Eurocode 3.  
(C6, PLO3)

CLO2 Create the design output drawing for single storey steel structure design according to Eurocode 3 using current software.  
(P5, PLO5)

CLO3 Adhere to the engineering ethic through presentation.  
(A4, PLO8)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Assignment	Design Project	Presentation
35%	30%	30%	5%

## DCC40152 Water Supply and Waste Water Engineering

WATER & WASTEWATER 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.

CLO1 Apply the concept of water supply and wastewater treatment according to related and current standard.  
(C3, PLO1)

CLO2 Explain verbally in formal presentation based on given task.  
(A5, PLO10)

CLO3 Determine the sustainability and impact of environmental issues regarding to water and wastewater treatment.  
(C5, PLO7)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Quiz	Presentation	Case Study
20%	10%	5%	15%

# Course Description

## DCC40163 Theory of Structures

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 analyse the forces in truss members using the equilibrium joint method for the statically determinate and using unit load method for the statically indeterminate trusses. Influence lines have important application for the design of structures that resist large live loads. Evaluation in influence lines include determination of shear force, bending moment and the absolute maximum moment.

CLO1 Calculate statically indeterminate beams and portal frame using appropriate method.  
(C3, PLO1)

CLO2 Analyze joint displacement in statically determinate trusses and internal forces for statically indeterminate trusses correctly.  
(C4, PLO2)

CLO3 Evaluate the influence lines for statically determinate beams correctly.  
(C5, PLO2)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Theory Test	Quiz	Assignment
20%	10%	20%

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## DCC40172 Structure, Hydraulics and Water Quality Laboratory

STRUCTURE, HYDRAULICS AND 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 theories learned. The course also focused on the structure, hydraulics and water quality which are the core of the civil engineering field.

CLO1 Construct appropriate instrumentation/ measurement techniques/ models/ simulation in structure, hydraulics and water quality engineering using standard procedure and equipment.  
(P3, PLO5)

CLO2 Practice the importance of achieving safety in structure, hydraulics and water quality according to OSH standard.  
(A4, PLO6)

CLO3 Analyse laboratory result in achieving objective of structure, hydraulics and water quality using engineering report standard.  
(C4, PLO4)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Laboratory Report	Laboratory Safety	Laboratory Practical
30%	10%	60%



# Course Description

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## SEMESTER 5

### DCC40181 Final Year Project 1

FINAL YEAR PROJECT 1 covers the knowledge and displays practice skills in civil engineering. The students are exposed to communication skills, group works, work planning, decision making and creativity using available facilities.

- CLO1 Develop the investigation process in civil engineering based in a clear and concise manner.  
(C3, PLO 4)
- CLO2 Complete a presentation for project proposal using an engineering appropriate standard.  
(A3, PLO 10)
- CLO3 Propose appropriate methodology in management and resources based on civil engineering project.  
(A3, PLO 11)
- CLO4 Display self-education skills in gathering technical information from various resources.  
(P3, PLO 12)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Final Presentation	Project Proposal	Log Book	Progress Presentation
10%	55%	25%	10%

### DCC50194 Final Year Project 2

FINAL YEAR PROJECT 2 covers knowledge and skills in civil engineering practices. The student will be exposed to 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, and 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.

- CLO1 Organize the project tasks based on research methodology by using appropriate tools.  
(P4, PLO 5)
- CLO2 Analyze the project results in achieving objective based on relevant standard and regulation.  
(C4, PLO 4)
- CLO3 Write the project report based on project finding using appropriate format.  
(C3, PLO 10)
- CLO4 Complete the project presentation confidently and effectively.  
(A5, PLO 10)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT				
Report	Final Presentation	Project Test	Log Book	Progress Presentation
40%	20%	15%	10%	15%



# Course Description

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## DCC50203 Reinforced Concrete Design

REINFORCED CONCRETE DESIGN covers concepts and methods of design for reinforced concrete structures comprising beam and slab. 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).

CLO1 Design double storey building for reinforced concrete structure correctly according to Eurocode 2.  
(C6, PLO3)

CLO2 Display a safe design for double storey reinforced concrete structure according to Eurocode 2.  
(P5, PLO5)

CLO3 Adhere to the engineering ethic to complete the design task.  
(A4, PLO8)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Assignment	Design Project	Presentation
35%	30%	30%	5%

## DCC50212 Hydrology

This course 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.

CLO1 Apply basic concept of applied hydrology in civil engineering.  
(C3, PLO1)

CLO2 Solve problem in applied hydrology for civil engineering.  
(C4, PLO2)

CLO3 Construct hydrological analysis using available software.  
(P3, PLO7)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Quiz	Mini Project	Case Study
15%	10%	15%	10%

# Course Description

## DCC50222 Hydraulics

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.

- CLO1 Explain the fundamental and principles in hydraulic engineering.  
(C3, PLO1)
- CLO2 Determine the principles of hydraulic engineering in pumps and fluid flow.  
(C3, PLO2)
- CLO3 Demonstrate the ability to work in team to solve problems on uniform and non-uniform open channel flow.  
(A3, PLO9)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Quiz	Assignment
15%	5%	30%

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## DCC50232 Engineering in Society

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.

- CLO1 Discuss the roles of engineering in society and the duties of maintaining health and safety in the workplace.  
(A2, PLO6)
- CLO2 Justify the importance of ethical issues and rules of conduct for the profession in civil engineering associated with contemporary technology and environmental protection in civil engineering.  
(A3, PLO8)
- CLO3 Display skills of self-education and communication techniques in organizing the activities of engineering practice.  
(P4, PLO12)

### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Assignment/ Role Play	Case Study	Project Report	Presentation (Case Study, Project)
20%	50%	20%	10%

# Course Description

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## SEMESTER 6

### DUT600610 Industrial Training

ENGINEERING INDUSTRIAL TRAINING course will provide student with first-hand experience in an engineering-practice environment outside the polytechnic. Student will practice their knowledge and skill based on knowledge learned in polytechnic through industry supervision to acquire the craft skill and essential. Student also need to demonstrate their responsibilities and professional ethic, communication, teamwork and inter-personal and life-long learning skills at the workplace.

CLO1 perform the assigned task accordingly based on job scope.  
(P4,PLO 5)

CLO2 demonstrate responsibility as an engineering technician while dealing with people of various background.  
(A5, PLO 6)

CLO3 practice good working ethics while undergoing industrial training.  
(A5, PLO 8)

CLO4 display ability to work in a team or independently base on the given task.  
(A4, PLO9)

CLO5 demonstrate oral communication skill in performing job requirement.  
(A3, PLO10)

CLO6 write a report based on given task accordingly to technical practice.  
(C3, PLO 10)

CLO7 Display life long learning skill in completing the given task.  
( P4, PLO 12)

#### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Industry		Industrial Lecturer Visitor		Institution
Performance Appraisal	Log Book	Student Character Validation	Presentation	Final Industry Training Report
50%	10%	10%	10%	10%

# Course Description

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## ELECTIVES COURSES

### DCC50242 Building Information Modeling (BIM)

BUILDING INFORMATION MODELLING (BIM) 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.

### DCC50252 Building Services

BUILDING SERVICES focuses 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.

CLO1 Construct building models using techniques, resources and BIM tools for basic modelling correctly.  
(P3, PLO5)

CLO2 Build building models using techniques, resources and BIM tools of 3D model in architecture, structure and plumbing appropriately.  
(P4, PLO5)

CLO3 Propose BIM coordination of 3D model consistent with engineering ethics appropriately.  
(A3, PLO8)

CLO4 Perform 5D (costing) in project management efficiently.  
(A5, PLO11)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT		
Laboratory Work	Mini Project	Presentation
40%	50%	10%

CLO1 Choose appropriate building services system with consideration of safety procedures, rules and regulations by the authority.  
(C5, PLO4)

CLO2 Identify building services system with consideration of the environmental impact.  
(A4, PLO7)

CLO3 Display teamwork in completing a case study of a building services system.  
(A5, PLO9)

ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT			
Test	Quiz	Case Study	Assignment
40%	10%	30%	20%

# Course Description

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## FREE ELECTIVES

### DCC50262 Environmental Pollution and Control

ENVIRONMENTAL POLLUTION AND CONTROL is a study on types and effects of communicable and non-communicable diseases to public health. It also emphasize 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.

### DUD10012 Design Thinking

This course offers the basic concept of Design Thinking through experiential learning. Students learn the five iterative phases of Design Thinking, which are Empathy, Define, Ideate, Prototype, and Testing. Students will apply these design thinking principles, process, and techniques to solve a real-world problem and come up with an innovative solution in the form of a product, system, or service prototype.

CLO1 Analyze technical concept of environmental pollution problems within environmental sustainability.  
(C4, PLO 4)

CLO2 Determine the integration of sustainable environment element in solving solid waste and hazardous waste management.  
(C5, PLO 7)

CLO3 Display teamwork in solving environmental problem effectively within community.  
(A5, PLO 9)

#### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Test	Mini Project	Assignment	Case Study
30%	25%	20%	25%

CLO1 Apply design thinking principles, process and techniques to solve a real-world problem innovatively.  
(C3, CLS 2)

CLO2 Demonstrate the ability to communicate ideas in solving a real-world problem.  
(A3, CLS 3b)

#### ASSESSMENT TASKS FOR COURSEWORK ASSESSMENT

Presentation	e-Portfolio
40%	60%

# Gred System :::::

The marks obtained by students in a certain course will be given points and grades according to the following groups:

MARKAH	NILAI MATA	GREd	STATUS
90 - 100	4.00	A+	Sangat Cemerlang
80 - 89	4.00	A	Cemerlang
75 - 79	3.67	A-	Kepujian
70 - 74	3.33	B+	Kepujian
65 - 69	3.00	B	Kepujian
60 - 64	2.67	B-	Lulus
55 - 59	2.33	C+	Lulus
50 - 54	2.00	C	Lulus
47 - 49	1.67	C-	Lulus
44 - 46	1.33	D+	Lulus
40 - 43	1.00	D	Lulus
30 - 39	0.67	E	Gagal
20 - 29	0.33	E-	Gagal
0 - 19	0.00	F	Gagal



# Reference :::::

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Spady, W. G. (1994). Outcome-Based Education: Critical Issues and Answers. American Association of School Administrators.

Driscoll, A. & Wood, S. (2007). Developing Outcomes-based Assessment for Learner-centered Education. A Faculty Introduction. Sterling, Virginia: Stylus Publishing.

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e ISBN 978-967-2860-68-6

