
KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

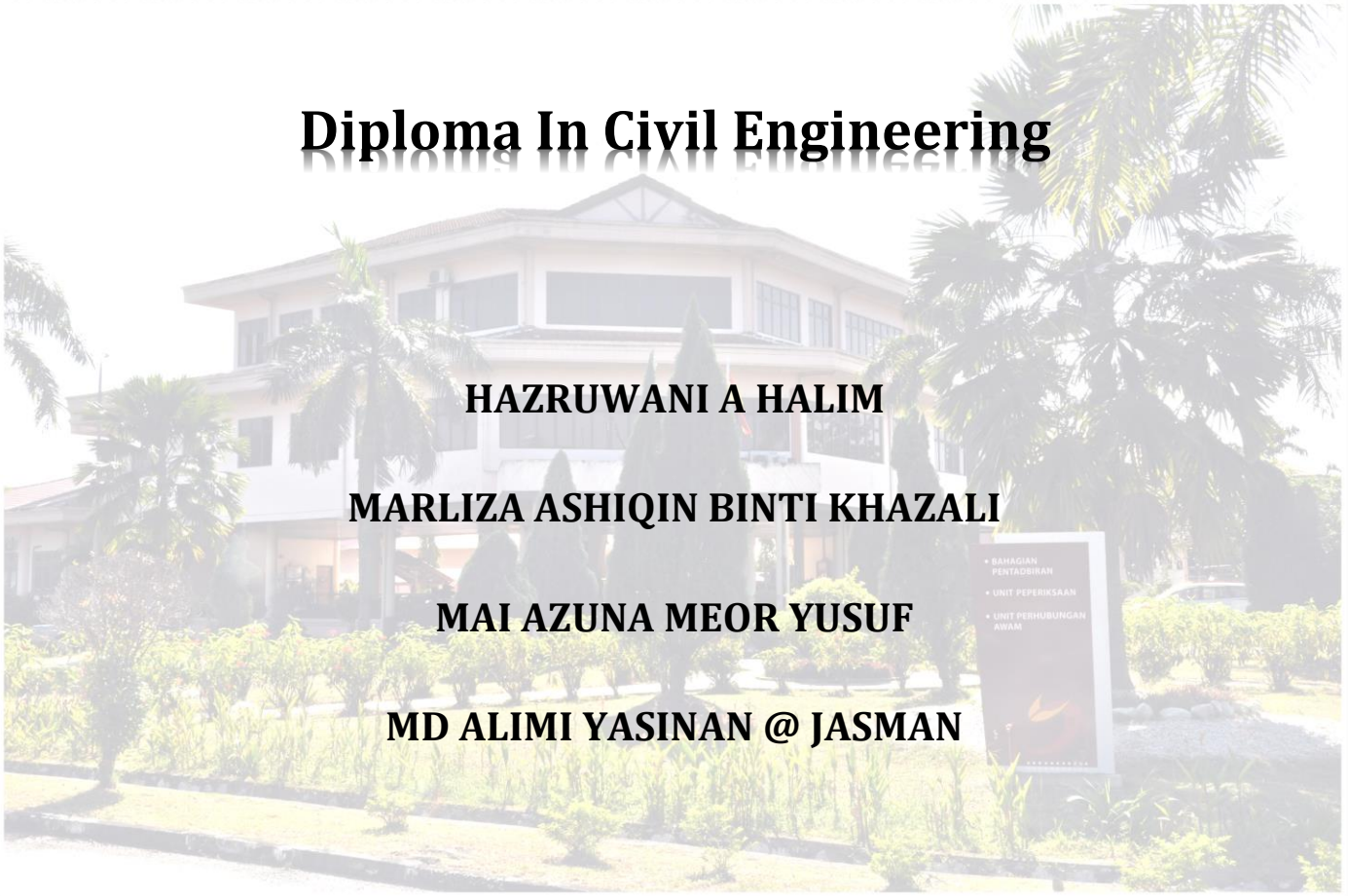
POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

# DIPLOMA IN CIVIL ENGINEERING

*Student's Handbook*

VERSION 2019

# Student's Handbook




## Diploma In Civil Engineering

**HAZRUWANI A HALIM**

**MARLIZA ASHIQIN BINTI KHAZALI**

**MAI AZUNA MEOR YUSUF**

**MD ALIMI YASINAN @ JASMAN**

# ALL RIGHTS RESERVED



**STUDENT'S HANDBOOK**

**DIPLOMA IN CIVIL ENGINEERING**

**Special project by :**

**Civil Engineering Department**

**Politeknik Sultan Salahuddin Abdul Aziz Shah (PSSAAS)**

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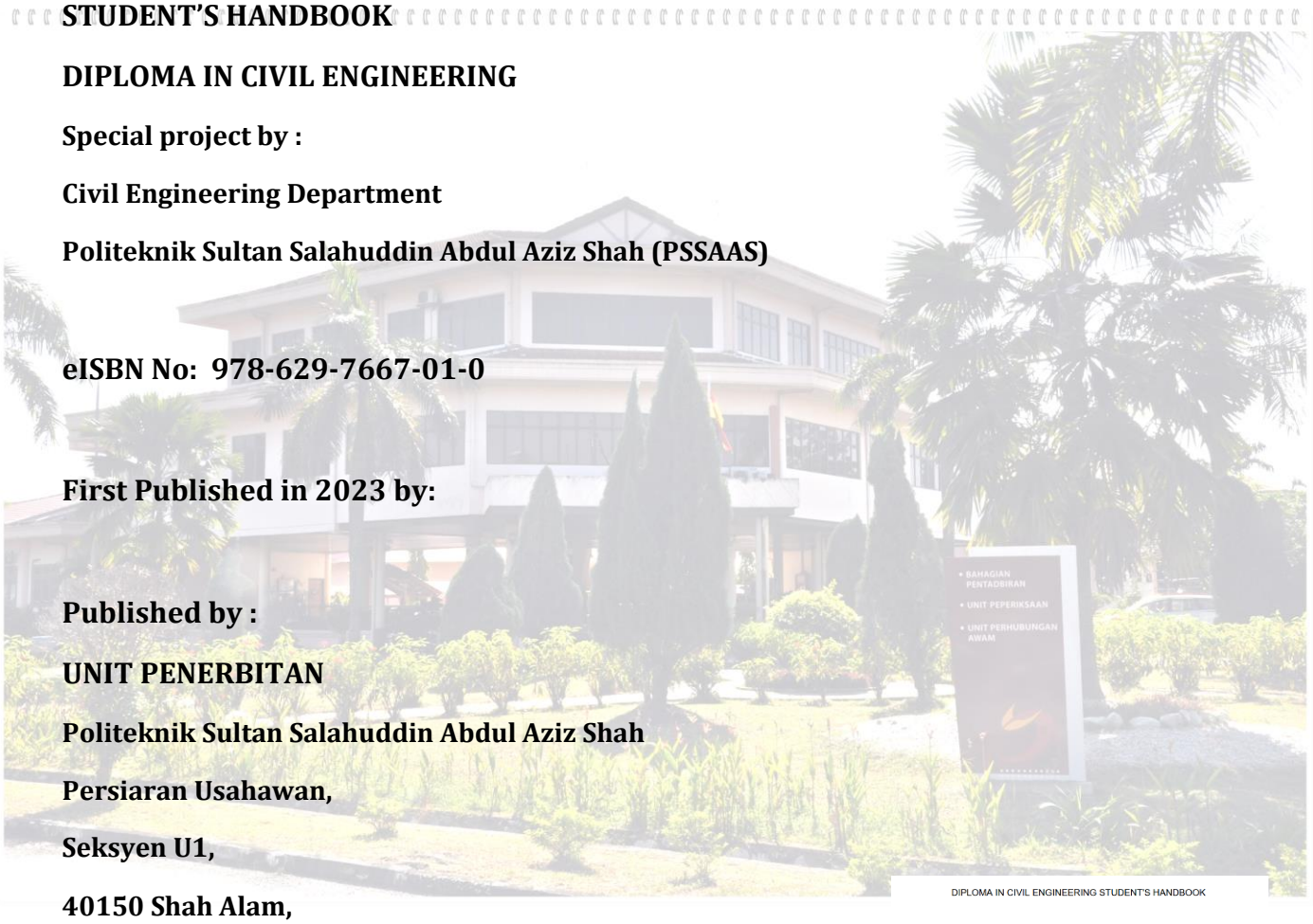


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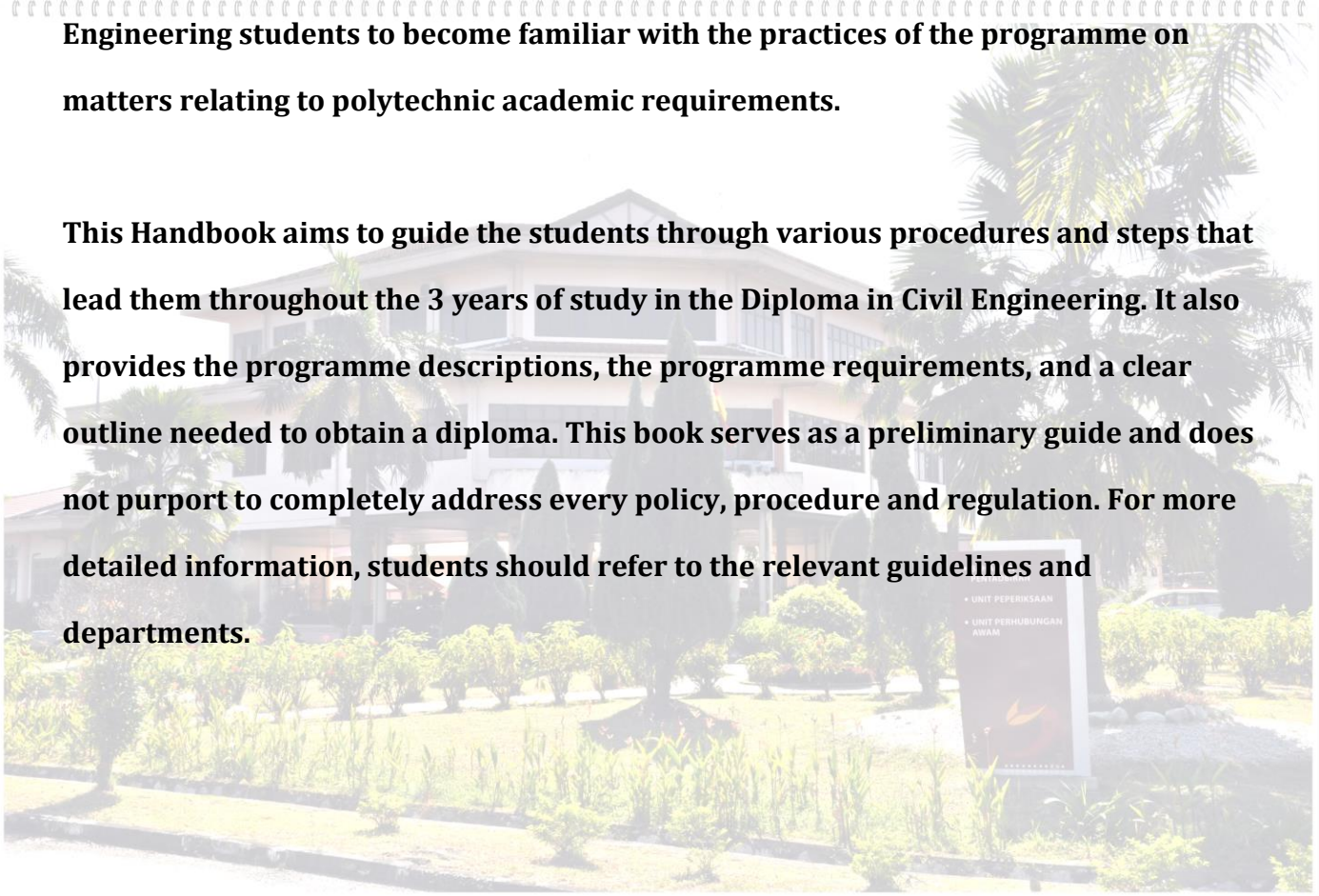
UNIT PENERBITAN POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

(online)

# Preface

**STUDENT HANDBOOK contains procedures and guidelines for the Civil Engineering Programme. This handbook is designed to assist Diploma in Civil Engineering students to become familiar with the practices of the programme on matters relating to polytechnic academic requirements.**

**This Handbook aims to guide the students through various procedures and steps that lead them throughout the 3 years of study in the Diploma in Civil Engineering. It also provides the programme descriptions, the programme requirements, and a clear outline needed to obtain a diploma. This book serves as a preliminary guide and does not purport to completely address every policy, procedure and regulation. For more detailed information, students should refer to the relevant guidelines and departments.**



# Acknowledgement

Assalamualaikum w.b.t and peace be upon you,

Grateful to Allah because with His grace we have completed this Student Handbook for the Diploma in Civil Engineering Programme. On this occasion, we would like to thank our Head of Programme Civil Engineering and all members in Civil Engineering Department, Polytechnic of Sultan Salahuddin Abdul Aziz Shah (PSSAAS) who were involved throughout the success of this task which provided a lot of relevant knowledge sharing in some of the contents in this Student Handbook.
Furthermore, in order to add value to our graduates, we greatly emphasize our students to be involved in co-curricular activities, especially the uniformed bodies.
I believe that with the quality courses offered by the Civil Engineering Departments, we would be able to produce high quality of towering personality graduates who would contribute to the development of our nation.

Thank you.

Finally, we were hoping that this handbook could be referred to as well as beneficial to civil engineering students.

**HAZRUWANI A HALIM**

**MARLIZA ASHIQIN BINTI KHAZALI**

**MAI AZUNA MEOR YUSUF**

**MD ALIMI YASINAN @ JASMAN**

# Writer's Bibliography

**HAZRUWANI A HALIM** is a senior lecturer and currently serves as Head of Programme in the Civil Engineering Department at Politeknik Sultan Salahuddin Abdul Aziz Shah, Shah Alam Selangor. Graduate Diploma in Civil Engineering (with education) from Kolej Universiti Teknologi Tun Hussein Onn (years), Degree in Civil Engineering at University Technology Malaysia (years), and Master of Engineering (Construction) at University Technology Malaysia (years). She has more than 12 years of teaching experience in the fields of civil engineering, such as industrialised building systems (IBS), construction project Management and civil engineering materials. His research interests include industrialized building system and construction

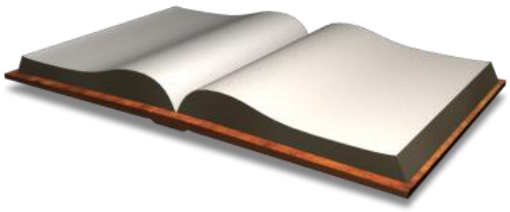
**MARLIZA ASHIQIN BINTI KHAZALI** is a Senior Lecturer at Sultan Salahuddin Abdul Aziz Shah Polytechnic, Shah Alam, Currently she is a Lecturer at Department of Civil Engineering (2001 – present ). Graduate Bachelor of Engineering With Honours (Civil) (2000) and Diploma in Civil Engineering (1998). She has experience teaching in Geotechnical Engineering, Project Management,Geotechnical and Highway Laboratory and several other subjects in Civil Engineering.

**MAI AZUNA BINTI MEOR YUSUF** is a Civil Engineering Lecturer at Politeknik Sultan Salahuddin Abdul Aziz Shah from year 2003. Graduated in Diploma Civil Engineering (With Education) from Maktab Teknik Cheras (MPT) and Degree in Civil Engineering at University Of Science Malaysia (USM). Has the background of former students of Ungku Omar Polytechnic in 1993-1995. She has 20 years' experience as a lecturer. She has teaching experience in the field of Civil Engineering such as Building maintenance, Highway and Traffic Engineering and several other subjects in Civil Engineering.

**MD ALIMI YASINAN @ JASMAN** is a Civil Engineering lecturer of Polytechnic Sultan Salahuddin Abdul Aziz Shah. Graduated in Diploma in Building, Bachelor of Construction Management (Hons) and Master Science in Construction Engineering from UiTM Shah Alam. He has 16 years' experience as lecturer. He has teaching experience in the field of Civil Engineering such as Constructions Technology, Digital Construction and Contract and Estimating.

# TABLE CONTENTS





## 1.0 INTRODUCTION

Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA), formerly known as Politeknik Shah Alam is located on 112 acres of land located in the state of Selangor. PSA is the 8th polytechnic in Malaysia under the World Bank Program and commenced operations in January 1997. PSA began its first session with 640 students in July 1997. Politeknik Sultan Salahuddin Abdul Aziz Shah is an educational institution dedicated to fulfilling the semiprofessional needs of the country in various industries. The operation started with a burning mission to provide quality education and training responsive to the ever changing technological and customer requirements, through teamwork and continuous improvement. The principle focus of PSA was to be a leading institution of world class standards. Thus, the momentum was set for PSA to be the emergent polytechnic of the new millennium.

PSA is a higher education institution formerly under the purview of Department of Polytechnic Education and Community Colleges (DPCCE) Malaysia but in the year of 2015 this institution was placed under the authority of Ministry of Higher Education (MoHE), Malaysia. This institution is responsible for advocating technical education and vocational programmes for Malaysian students. It plays a vital role in producing semi-professional workers for the engineering and commercial industries in the private and public sectors in Malaysia. PSA aim is to develop the country's human resources to meet the needs of the New Economic Model (MBE) that emphasizes innovation and creativity.

## 2.0 VISION, MISSION AND MOTTO

**PSA Vision**

"To be Leading-Edge TVET Institution"

**PSA Motto**

"The Preferred Polytechnic"

**PSA Mission**

1) To provide wide access to quality and recognized TVET programmes;
2) To develop holistic, entrepreneurial and balanced graduates;
3) To capitalize on smart partnership with stakeholders; and
4) To empower communities through lifelong learning.

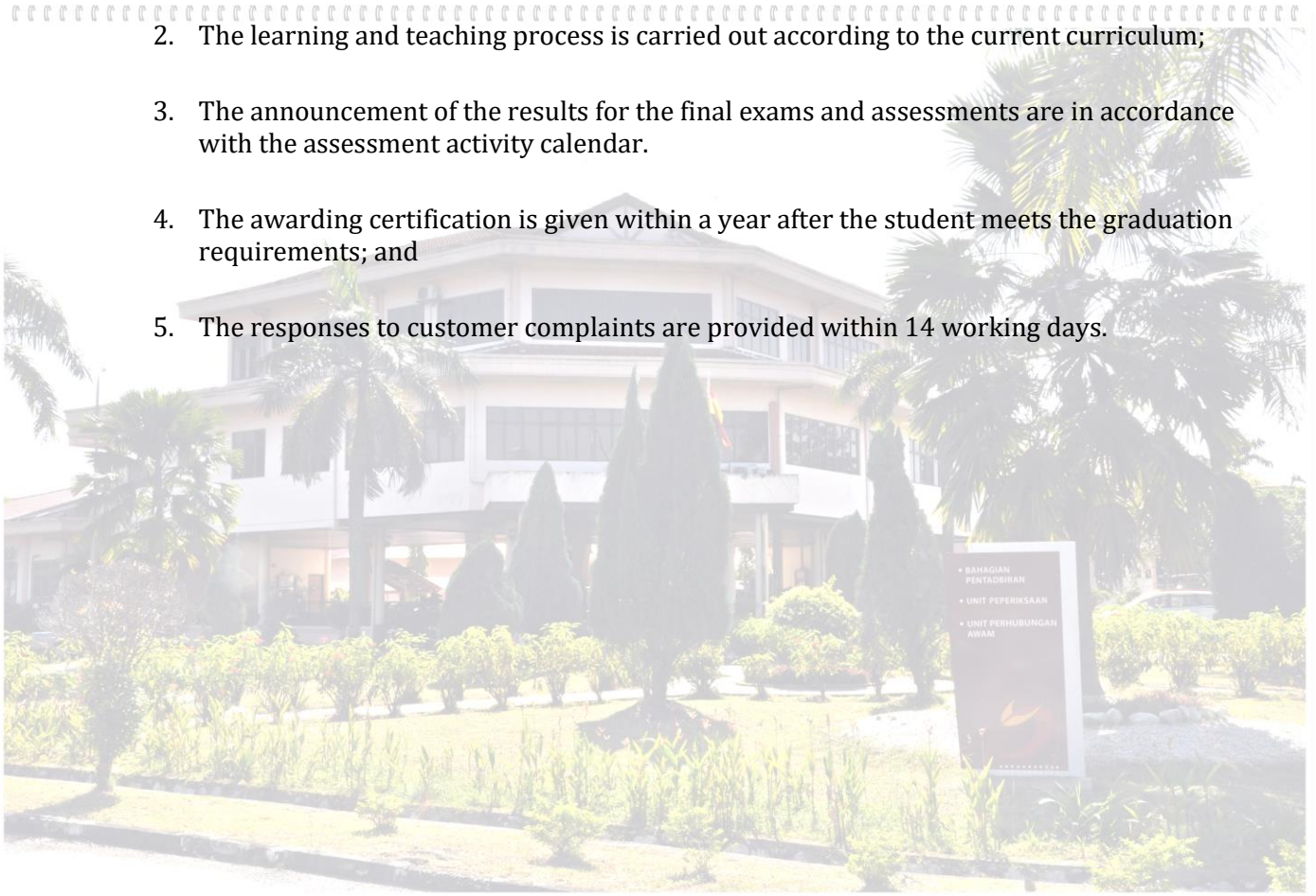
## 3.0 QUALITY POLICY

PSA is dedicated to provide effective and efficient customer service by means of teamwork, evaluation, and ongoing enhancement.

## 4.0 PSA QUALITY OBJECTIVES

We, PSA employees offer services with quality, ethics and integrity, and we pledge that:

1. The study programmes offered are accredited by MQA or other relevant accrediting body;
2. The learning and teaching process is carried out according to the current curriculum;
3. The announcement of the results for the final exams and assessments are in accordance with the assessment activity calendar.
4. The awarding certification is given within a year after the student meets the graduation requirements; and
5. The responses to customer complaints are provided within 14 working days.

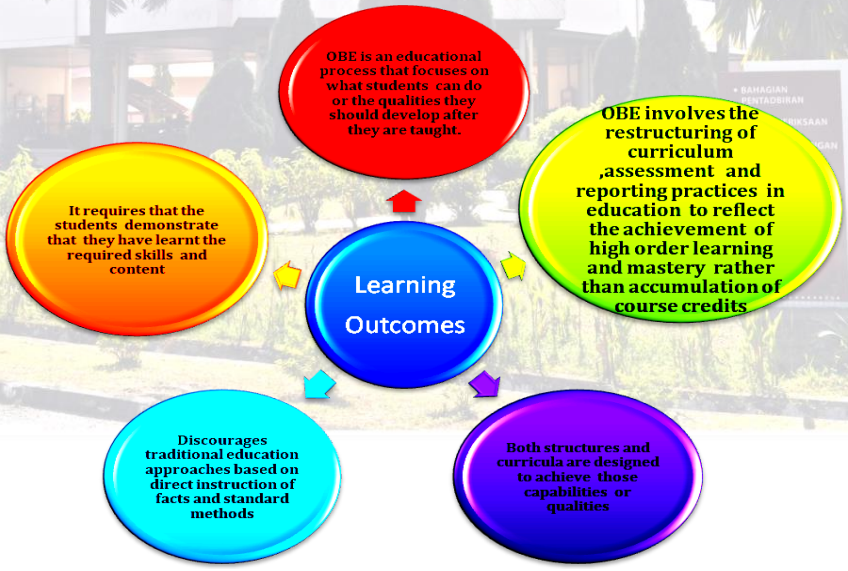



## 5.0 OUTCOME-BASED EDUCATION [OBE]

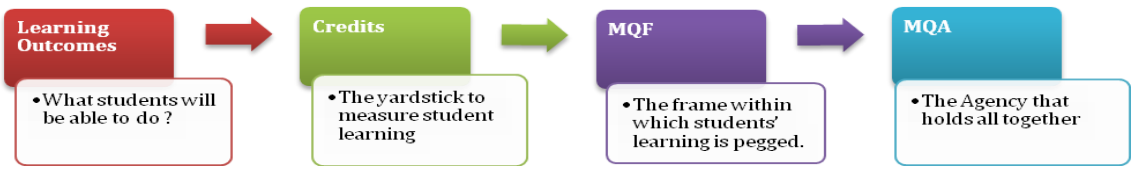
Outcome-based education (OBE) is a educational model for students to demonstrate their knowledge and able to perform according to the required outcomes. It is a student-centered approach that focuses on students' learning. It starts with a clear picture of what students should know, what they should be able to do, and what desirable attitudes and values needed to organize the curriculum, instruction, and assessment to ensure an ultimate learning (Spady, 1994:1). Thus, OBE involves the restructuring of curriculum and assessment that reflects achievement of high learning order and mastery learning.

OBE helps students to be aware of what they should learn, aware of what they are learning and the control over their own learning. It leads to successful student learning and encourages lecturers to be well prepared. It also provides students with *appropriate, purposeful* learning experiences and opportunities for students to develop originality, self-motivation and independence while acquiring useful knowledge and skills.

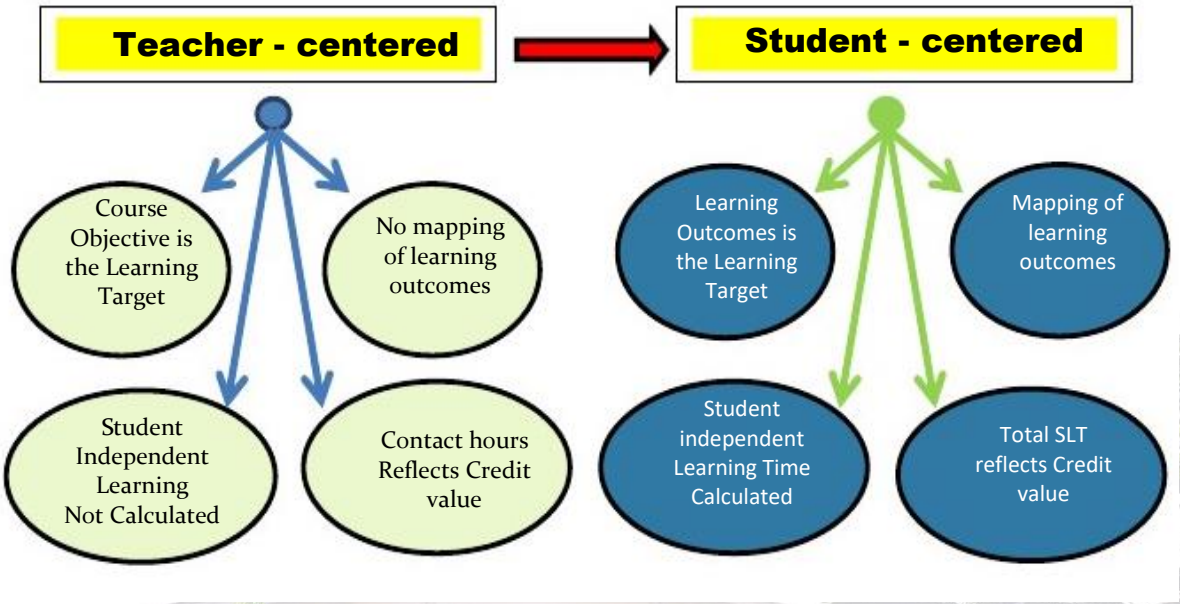
### 5.1 WHAT IS OUTCOME BASED EDUCATION [OBE]



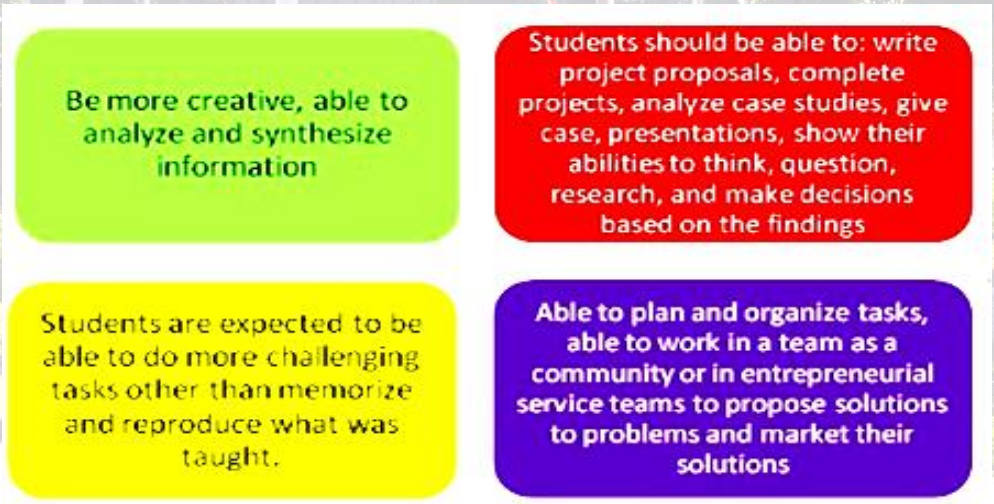

### 5.2 ACCREDITATION PROCESS



## 5.3 HOW DOES OBE AFFECT TEACHING-LEARNING?




## 5.4 EXPECTATIONS ON STUDENTS




**‘ The person who doesn’t make mistakes is unlikely to make anything’**


# DIPLOMA IN CIVIL ENGINEERING

## 6.0 PROGRAMME OVERVIEW

### 6.1 INTRODUCTION

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 area 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. 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 behavioral 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.

### 6.2 SYNOPSIS

This programme is designed to equip students with sound knowledge, skills and 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.

### 6.3 JOB PROSPECTS

After graduating with a Diploma in Civil Engineering, there are greater job opportunities for graduates to work in the construction field or in government sectors as follows :

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

### 6.4 PROGRAMME AIM (PAI)

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.

### 6.5 PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

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

PEO1 : Working in the field of civil engineering

PEO2 : Lead or a team member to support their role in industries

PEO3 : Engaged in activities to enhance knowledge or starting/ embark their own enterprise

PEO4 : Fulfill professional and communities responsibilities, conforming to ethical and environmental values

### 6.6 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 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 (DK! 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:

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 OBJECTIVES (PEO)

| PROGRAMME LEARNING OUTCOME (PLO) | | PROGRAMME EDUCATIONAL OBJECTIVES (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; | | | √ | |

## 6.7 PROGRAMME STRUCTURE FOR DIPLOMA IN CIVIL ENGINEERING

| 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 | 1 |
| | MPU24XX1 | Unit Beruniform 1 | | | | |
| Common Core | DUW10012 | Occupational, Safety & Health for Engineering | 2 | 0 | 0 | 2 |
| | DBS10012 | Engineering Science | 2 | 1 | 0 | 2 |
| | DBM10013 | Engineering Mathematics 1 | 2 | 0 | 2 | 3 |
| Discipline Core | DCC10012 | Engineering Drawing and Computer Aided Drafting (CAD) | 0 | 4 | 0 | 2 |
| | DCC10022 | Brickworks and Concrete Laboratory | 0 | 3 | 0 | 2 |
| | DCC10032 | Civil Engineering Materials | 2 | 0 | 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 | Mechanics 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 | 1 | 0 | 2 | 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** |
| | | **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 | 1 | 0 | 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 | Final Year Project 1 | 0 | 2 | 0 | 1 |
| Electives | | Electives 1 | 0 | 4 | 0 | 2 |
| | | **TOTAL** | **25** | | | **16** |
| | | **SEMESTER 5** | | | | |
| Discipline Core | DCC50194 | Final Year 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 | | Electives 2 | 2 | 0 | 0 | 2 |
| | | **TOTAL** | **22** | | | **15** |
| | | **SEMESTER 6** | | | | |
| Industrial Training | DUT600610 | Industrial Training | 0 | 0 | 0 | 10 |
| | | **TOTAL** | **0** | | | **10** |
| | | | | | **TOTAL CREDIT VALUE** | 92 |

| | | ELECTIVES COURSE | | | | |
|---|---|---|---|---|---|---|
| 1 | DCC50242 | Building Information Modelling (BIM) | 0 | 4 | 0 | 2 |
| 2 | DCC50252 | **Building Services** | 2 | **0** | 0 | 2 |
| 3 | DCC50262 | **Environmental Pollution and Control** | 2 | **0** | 0 | 2 |

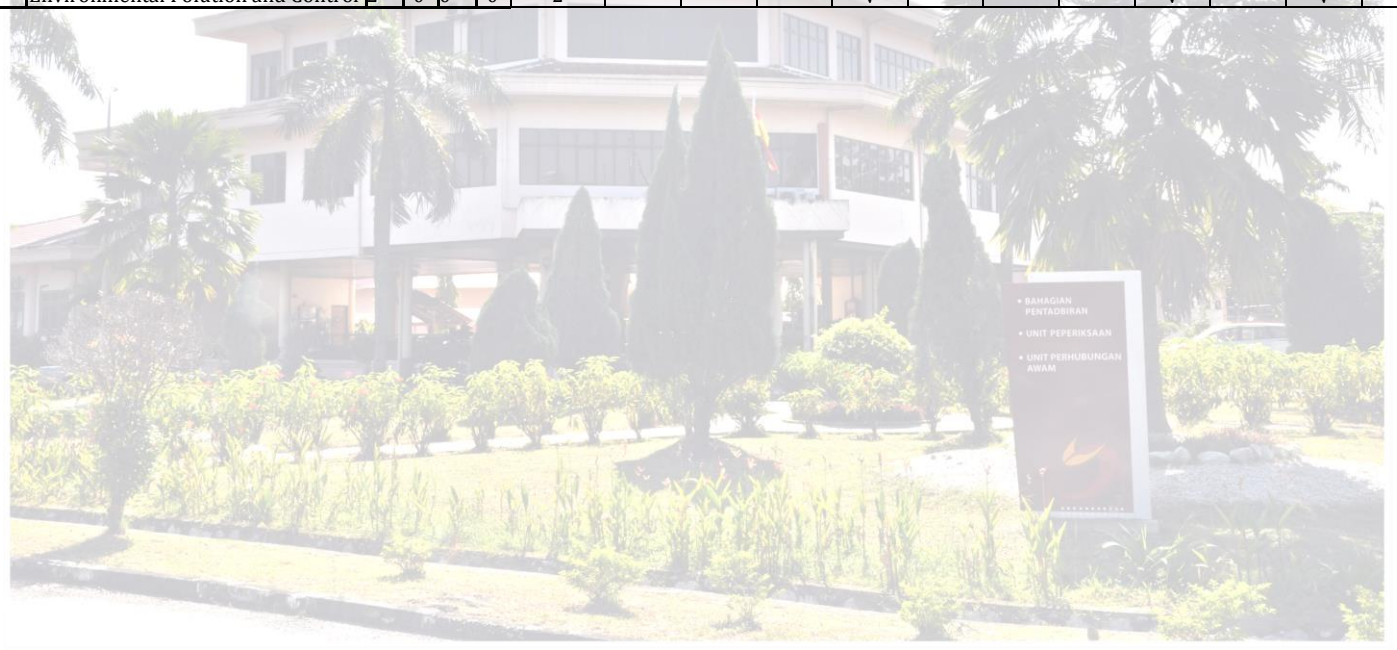
## 6.8 MATRIX OF COURSES VS PROGRAMME LEARNING OUTCOME (PLO)

| COMPONENTS | 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 | Ehics | Individual and Team Work | Communications | Project Management and Finance | Life Long Learning | |
| | | | | | | | | CLS1 | CLS2 | CLS2 | CLS2 | CLS3a | CLS3c | CLS3c | 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 | DUW10012 | 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 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** | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 |
| | 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** | | | | | | | | | | | | | | |
| **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** | | | | | | | | | | | | | | |
| **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 | 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 | | | | | | | | | | | | | | |
| | | **TOTAL** | | **25** | | | **16** | | | | | | | | | | | | | | |
| **SEMESTER 5** | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | |
| | | **TOTAL** | **22** | | | | **15** | | | | | | | | | | | | | | | |
| **SEMESTER 6** | | | | | | | | | | | | | | | | | | | | | | |
| Industrial Training | DUT600610 | 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 Polution and Control | 2 | 0 | 0 | 0 | 2 | | | | √ | | | | √ | | √ | | | | | |



## 7.0 MATRIX PROGRAMME ASSESSMENT OF DIPLOMA IN CIVIL ENGINEERING

### MATRIX PROGRAMME ASSESSMENT

### SEMESTER 1

| COURSE | CONTINUOUS ASSESSMENT (CA) | | | | | FINAL EXAMINATION (FE) |
|---|---|---|---|---|---|---|
| | **TEST** | **QUIZ** | **ASSIGNMENT** / END OF CHAPTER/ GROUP DISCUSSION / E-FOLIO / THEORETICAL EXERCISE | **PRACTICAL**/ LAB WORK/ FIELD WORK/ **PRACTICAL TEST** / PRACTICAL DRAWING / TUTORIAL EXERCISE | **PROJECT** / FIELD TEST / PRACTICAL REPORT / **PRESENTATION /MINI PROJECT** / CASE STUDY / TUNJUKCARA | |
| MPU21032 Penghayatan Etika dan Peradaban | | | 1 (30%) | | 1 (40%),1 (15%),1 (15%), | |
| DUE10012 Communicative English 1 | 1 (20%) | | 1 (30%),1 (20%) | | 1 (30%) | |
| MPU24XX1 Sukan | | | | | 1 (40%),1 (60%) | |
| MPU24XX1 Unit Beruniform 1 | | | | | 1 (40%),1 (60%) | |
| DUW10012 Occupational, Safety & Health | 1 (25%) | 1 (15%) | | | 1 (20%), 1 (20%), 1 (20%) | |
| DBM10013 Engineering Mathematics 1 | 1 (15%) | 2 (10%) | 3 (20%) | | 2 (15%) | FE |
| DBS10012 Engineering Science | 1 (20%) | | | 3 (15%) | 1 (25%) | FE |
| DCC10012 Engineering Drawing and Computer Aided Drafting | | | 30(30%) | 1 (20%) | 1 (30%), 1(20%) | |
| DCC10032 Civil Engineering Materials | 1 (20%) | 1 (10%) | 1 (30%) | | 1 (10%) | FE |
| DCC10022 Brickworks and Concrete Laboratory | | | | 4 (60%) | 2 (40%) | |

## SEMESTER 2

| COURSE | CONTINUOUS ASSESSMENT (CA) | | | | | FINAL EXAMINATION (FE) |
|---|---|---|---|---|---|---|
| | **TEST** | **QUIZ** | **ASSIGNMENT** / END OF CHAPTER / CASE STUDY / E-FOLIO/ TUGASAN BERASASKAN MASALAH | **PRACTICAL**/ LAB WORK/ **FIELD WORK**/ **PRACTICAL TEST** / PRACTICAL DRAWING / TUTORIAL EXERCISE | **PROJECT** / FIELD TEST **/ PRACTICAL REPORT** / PRESENTATION /MINI PROJECT / CASE STUDY / PERBINCANGAN/ PEMBENTANGAN/ TUNJUKCARA | |
| MPU23052 Sains, Teknologi dan Kejuruteraan Dalam Islam * | | | 1 (30%),1 (30%) | | 1 (20%), 1 (20%) | |
| MPU23042 Nilai Masyarakat Malaysia** | | | 1 (30%),1 (30%) | | 1 (20%), 1 (20%) | |
| MPU24XX1 Kelab/Persatuan *** | | | | | 1 (40%),1 (60%) | |
| MPU24XX1 Unit Beruniform 2 | | | | | 1 (40%),1 (60%) | |
| DBM20023 Engineering Mathematics 2 | 1 (15%) | 2 (10%) | 3 (20%) | | 2 (15%) | FE |
| DCC20042 Plumbing and Carpentry Workshop | | | | 2 (50%) | 2 (50%) | |
| DCC20053 Mechanics of Civil Engineering Structures | 2 (20%) | 2 (20%) | 2 (20%) | | | FE |
| DCC20073 Contract and Estimating | 2 (20%) | 1 (5%) | 1 (10%) | | 1 (15%) | |
| DCC20063 Engineering Survey | 2 (30%) | 2 (10%) | | 1 (10%), 4 (30%) | 4 (20%) | |

## SEMESTER 3

| COURSE | CONTINUOUS ASSESSMENT (CA) | | | | | FINAL EXAMINATION (FE) |
|---|---|---|---|---|---|---|
| | **TEST** | **QUIZ** | **ASSIGNMENT** / LISTENING TEST | **PRACTICAL**/LABORATORY PRACTICAL/ FIELD WORK / ROLE PLAY / TUNJUKCARA/ PRODUCT PITCHING | PROJECT / FIELD TEST / PRACTICAL REPORT / **PRESENTATION/ MINI PROJECT /CASE STUDY** / BUSINESS PLAN PRESENTATION/ ONLINE BUSINESS REPORT | |
| DUE30022 Communicative English 2 | 1 (20%) | | 1 (20%) | 1 (30%) | 1 (30%) | |
| MPU22012 Entrepreneurship | | | | 1 (35%) | 1 (30%),1 (35%) | |
| DCC30082 Industrialised Building System (IBS) in Sustainable Construction | | | | 1 (40%) | 1 (29%),1 (40%) | |
| DCC30093 Geotechnical Engineering | 2 (20%) | | 1 (10%) | | 1 (10%),1 (10%) | FE |
| DCC30103 Highway and Traffic Engineering | 2 (20%) | | 1 (10%) | | 1 (10%),1 (10%) | FE |
| DCC30112 Geotechnical and Highway Engineering Laboratory | | | | Laboratory Practical 8 (60%) Laboratory Safety 2 (10%) | Laboratory Report 6 (30%) | |
| DCC30122 Fluids Mechanics | 2 (20%) | 1 (5%) | 2 (20%) | | 1 (5%) | FE |

## SEMESTER 4

| COURSE | CONTINUOUS ASSESSMENT (CA) | | | | | FINAL EXAMINATION (FE) |
|---|---|---|---|---|---|---|
| | **TEST** | **QUIZ** | **ASSIGNMENT** / WRITTEN TASK / **PROPOSAL (Log Book)** | PRACTICAL/LABORATORY PRACTICAL/ LABORATOSRY SAFETY/DESIGN PROJECT/ FIELD WORK / REPORT / MOCK INTERVIEW | PROJECT / FIELD TEST / PRACTICAL REPORT /LABORATORY REPORT/ **PRESENTATION/ PROGRESS PRESENTATION/ FINAL PRESENTATION/ MINI PROJECT /CASE STUDY** | |
| DUE50032 Communicative English 3 | 1 (15%) | | 1 (15%),1 (15%) | 1 (35%) | 1 (20%) | |
| DCC40132 Project Management and Practices | 2 (15%) | 1 (5%) | 1 (10%) | | 1 (20%) | FE |
| DCC40142 Steel Structure Design | 2 (35%) | 2 (10%) | 2 (30%) | 1 (30%) | 1 (5%) | |
| DCC40152 Water Supply and Waste Water Engineering | 2 (20%) | 2 (10%) | | | 1 (5%), 1 (15%) | FE |
| DCC40163 Theory of Structures | 2 (20%) | 2 (10%) | 2 (20%) | | | FE |
| DCC40172 Structure, Hydraulics and Water Quality Laboratory | | | | 9 (60%), 3 (10%) | 6 (30%) | |
| DCC40181 Civil Engineering Project 1 | | | 2 (25%) | | 1 (55%), 1 (10%), 1 (10%) | |
| DCC50252 Building Services (Elective 1) | 2 (40%) | 2 (10%) | 1 (20%) | | 1 (30%) | |
| DCC50262 Environmental Pollution and Control (Elective 1) | 2 (30%) | | 1 (20%) | | 1 (25%), 1 (25%) | |

## SEMESTER 5

| COURSE | CONTINUOUS ASSESSMENT (CA) | | | | | FINAL EXAMINATION (FE) |
|---|---|---|---|---|---|---|
| | **TEST** / PRACTICAL TEST | **QUIZ** | ASSIGNMENT /E-FOLIO/ WEEKLY PROGRESS (Log Book) | PRACTICAL/ FIELD WORK / REPORT / DESIGN PROJECT/ / LAB WORK | PROJECT / FIELD TEST / PRACTICAL REPORT / *PRESENTATION* /**MINI PROJECT** / **CASE STUDY** | |
| DCC50194 Civil Engineering Project 2 | | | 1 (10%) | | Report 1 (40%)<br>Project Task 1 (15%)<br>Progress Presentation 1 (15%)<br>Final Presentation 1 (20%) | |
| DCC50203 Reinforced Concrete Design | 2 (35%) | | 2 (30%) | 1 (30%) | 1 (5%) | |
| DCC50212 Hydrology | 1 (15%) | 2 (10%) | | | 1 (15%), 1 (10%) | FE |
| DCC50222 Hydraulics | 1 (15%) | 2 (5%) | 2 (30%) | | | FE |
| DCC50232 Engineering in Society | | | 1 (20%) | | Project Report 1 (20%)<br>2 (10%), 2 (50%) | |
| DCC50242 Building Information Modelling (BIM) (Elective 2) | | | | Laboratory work 3 (40%) | 1 (10%), 1 (50%) | |

## 8.0 COURSE LEARNING OUTCOME (CLO)


| COURSE CODE | COURSE NAME | COURSE LEARNING OUTCOMES |
|---|---|---|
| MPU21032 | Penghayatan Etika dan Peradaban | 1. membentangkan konsep etika dan peradaban dalam kepelbagaian tamadun. (A2, CLS5)<br>2. menerangkan sistem, tahap perkembangan, kesepaduan sosial dan kebudayaan merentas bangsa di Malaysia. (A2, CLS5)<br>3. mencadangkan sikap yang positif terhadap isu dan cabaran kontemporari dari perspektif etika dan peradaban. (A3, CLS4) |
| DUE10012 | Communicative English 1 | 1. Participate in a discussion using effective communication and social skills to reach an amicable conclusion by accommodating differing views and opinions. (A3,CLS3b)<br>2. Demonstrate awareness of values and opinions embedded in texts on current issues. (A3,CLS3b)<br>3. Present a topic of interest that carries identifiable values coherently using effective verbal and non-verbal communication skills. (A2,CLS4) |
| MPU24XX1 | Sukan | 1. Mempamerkan kemahiran khusus bagi kursus berkaitan. (P2,CLS4)<br>2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif. (A3 CLS3d) |
| MPU24XX1 | Unit Beruniform 1 | 1. Mempamerkan kemahiran khusus bagi kursus berkaitan. (P2,CLS4)<br>2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif. (A3 CLS3d) |

| COURSE CODE | COURSE NAME | COURSE LEARNING OUTCOMES |
|---|---|---|
| DUW10022 | Occupational, Safety & Health for Engineering | 1. Explain briefly Occupational Safety and Health (OSH) procedures, regulation and its compliance in Malaysia. (C2, PLO1)<br>2. Initiates incident hazards, risks and safe work practices in order to maintain health and safe work environment. (A3, PLO8)<br>3. Demonstrate communication skill in group to explain the factor that can lead to accident in workplace. (A3,PLO10) |
| DBM10013 | Engineering Mathematics 1 | 1. Use mathematical statement to describe relationship between various physical phenomena. (C3, CLS1)<br>2. Show mathematical solutions using the appropriate techniques in mathematics. (C3, CLS3c)<br>3. Use mathematical expression in describing real engineering problems precisely, concisely and logically (C3, CLS3b) |
| DBS10012 | Engineering Science | 1. Use basic physics concept to solve engineering physics problems. (C3, CLS1)<br>2. Apply knowledge of fundamental physics in activities to mastery physics concept (C3, CLS1)<br>3. Perform appropriate activities related to physics concept. (P3, CLS3a) |
| DCC10012 | Engineering Drawing and Computer Aided Drafting (CAD) | 1. Display ability to produce basic engineering drawing using appropriate tool and equipment correctly. (P3, PLO5)<br>2. Build 2D plan in engineering drawing appropriately. (P4, PLO5)<br>3. Present an understanding of drawing process in mini project presentation verbally. (A3, PLO10) |
| DCC10022 | Brickworks and Concrete Laboratory | 1. Perform practical activities using appropriate tools and techniques for concrete works with safety awareness .(P3,PLO5)<br>2. Complete a selected mini project on brickworks through group participation. (P5,PLO5)<br>3. Participate actively in a teamwork during practical activities.(A3,PLO9) |
| DCC10032 | Civil Engineering Materials | 1. Apply fundamental concept and behaviour of different types of material in civil engineering construction (C3, PLO1)<br>2. Present orally the use of construction materials in a particular project using visual aids appropriately. (A2, PLO10)<br>3. Display the ability to search various resources about current construction materials to the assigned topics. (C2, PLO12) |

# Course Learning Outcomes Semester 2

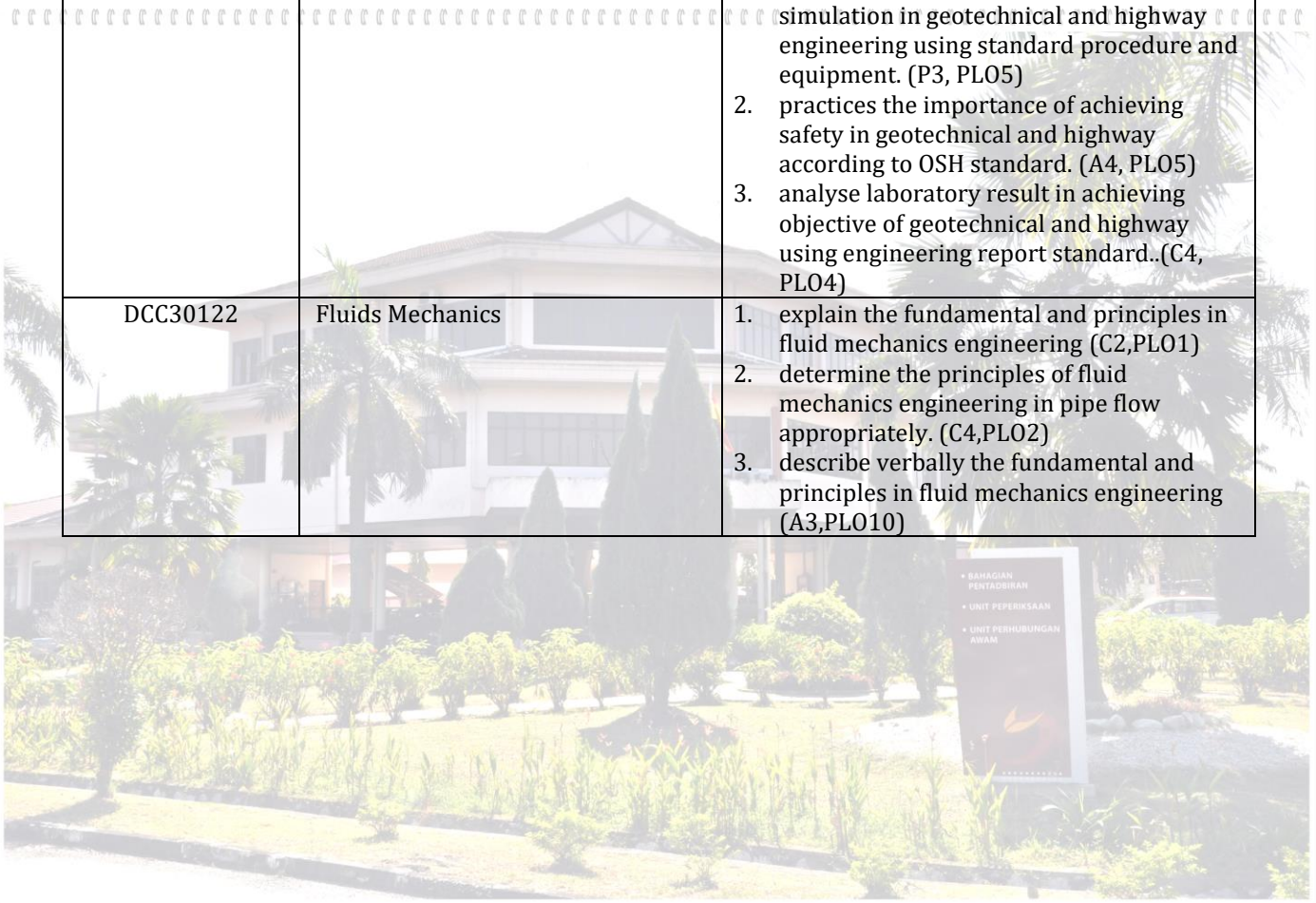
| COURSE CODE | COURSE NAME | COURSE LEARNING OUTCOMES |
|---|---|---|
| MPU23052 | Sains, Teknologi dan Kejuruteraan Dalam Islam* | 1. Melaksanakan dengan yakin amalan Islam dalam kehidupan seharian (A2,CLS4)<br>2. Menerangkan etika dan profesionalisme berkaitan sains teknologi dan kejuruteraan dalam Islam.( A3,CLS5)<br>3. Menghubungkait minda ingin tahu dengan prinsip syariah, etika dan kaedah fiqh dalam bidang sains, teknologi dan kejuruteraan menurut perspektif Islam (A4,CLS4) |
| MPU23042 | Nilai Masyarakat Malaysia** | 1. Membincangkan sejarah dan nilai dalam pembentukan masyarakat di Malaysia. (A2,CLS4)<br>2. Menerangkan etika dan profesionalisme terhadap konsep perpaduan bagi meningkatkan semangat patriotisme masyarakat Malaysia. (A3,CLS5)<br>3. Menghubungkait minda ingin tahu dengan cabarancabaran dalam membentuk masyarakat Malaysia. (A4,CLS4) |
| MPU24XX1 | Kelab / Persatuan*** | 1. Mempamerkan kemahiran khusus bagi kursus berkaitan. (P2,CLS4)<br>2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif. (A3 CLS3d) |
| MPU24XX1 | Unit Beruniform 2 | 1. Mempamerkan kemahiran khusus bagi kursus berkaitan. (P2,CLS4)<br>2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif. (A3 CLS3d) |
| DBM20023 | Engineering Mathematics 2 | 1. Use algebra and calculus knowledge to describe relationship between various physical phenomena.. (C3, CLS1)<br>2. Solve the mathematical problems by using appropriate and relevant fundamental calculus techniques.(C3, CLS3c)<br>3. Use mathematical language to express mathematical ideas and arguments |

| | | |
|---|---|---|
| | | precisely, concisely and logically in calculus. (A3, CLS3b) |
| DCC20042 | Plumbing and Carpentry Workshop | 1. Assemble appropriate tools and techniques for plumbing works with safety awareness.. (P3, PLO5)<br>2. Complete a mini project for carpentry works within a given time frame. (P5, PLO5)<br>3. Participate actively in a team work during practical activities. (A3, PLO9) |
| DCC20053 | Mechanics Of Civil Engineering Structures | 1. apply the fundamental knowledge and principles of mechanic structure in civil engineering.( C3, PLO1)<br>2. analyze structure behavior in determinate structure based on the problem given.( C4, PLO2)<br>3. construct the diagram related to stress and deflection of determinate beam.( P3, PLO10) |
| DCC20063 | Engineering Survey | 1. apply correctly the fundamental principles and practices of surveying work. (C3, PLO1)<br>2. perform Civil Engineering Survey works using appropriate instrument based on standard procedure and current surveying instrument. (P3, PLO5)<br>3. initiate positive leadership and team work by contributing actively in groups during fieldwork that yield valid results.. (A3, PLO9) |
| DCC20073 | Contract and Estimating | 1. explain the fundamental concepts of construction industry in general, tender procedure and contract procedure in Malaysia. (C3, PLO1)<br>2. estimate the cost of construction project by using preliminary estimating method, build-up rate method and quantity measurement. (C4, PLO2)<br>3. describe the understanding of the professional engineering ethics and practice based on Standard Form of Contract (P.W.D Form 203/203A) efficiently. (A3, PLO8)<br>4. perform efficient management of time and resources through quantity measurement and build-up rate in accordance with Public Work Department Practice. (A5, PLO11) |

# Course Learning Outcomes Semester 3

| COURSE CODE | COURSE NAME | COURSE LEARNING OUTCOMES |
|---|---|---|
| DUE30022 | Communicative English 2 | 1. Describe a product or service effectively by highlighting its features and characteristics that appeal to a specific audience. (A3,CLS3b)<br>2. Describe processes, procedures and instructions clearly by highlighting information of concern (A3,CLS4)<br>3. Demonstrate effective communication and social skills in handling enquiries and complaints amicably and professionally. (A3,CLS3b) |
| MPU22012 | Entrepreneurship | 1. propose the value proposition of entrepreneurial idea using Business model Canvas. (A3, CLS3b)<br>2. develop a viable business plan by organizing business objectives according to priorities. (A4, CLS4)<br>3. organize the online presence business in social media marketing platform(A3, CLS4) |
| DCC30082 | Industrialised Building System (IBS) in Sustainable Construction | 1. assemble suitable green materials and Industrialised Building System (IBS) components with supervision. (P3, PLO5)<br>2. construct green system and IBS component with compliance to measurement of Modular Coordination and IBS Score. (P4, PLO5)<br>3. demonstrate punctuality and responsibility in completing task of assembling green system and IBS. (A3, PLO8)<br>4. organize time and resources efficiently in site management. (A5, PLO11) |
| DCC30093 | Geotechnical Engineering | 1. Apply fundamental of engineering properties of soils in civil engineering works(C3, PLO1)<br>2. analyze geotechnical engineering problem using appropriate method in determination of safe, stable earthworks and geotechnical structures. (C4, PLO2)<br>3. analyze data to reach conclusion on assigned topic of case study. (C4, PLO4) |

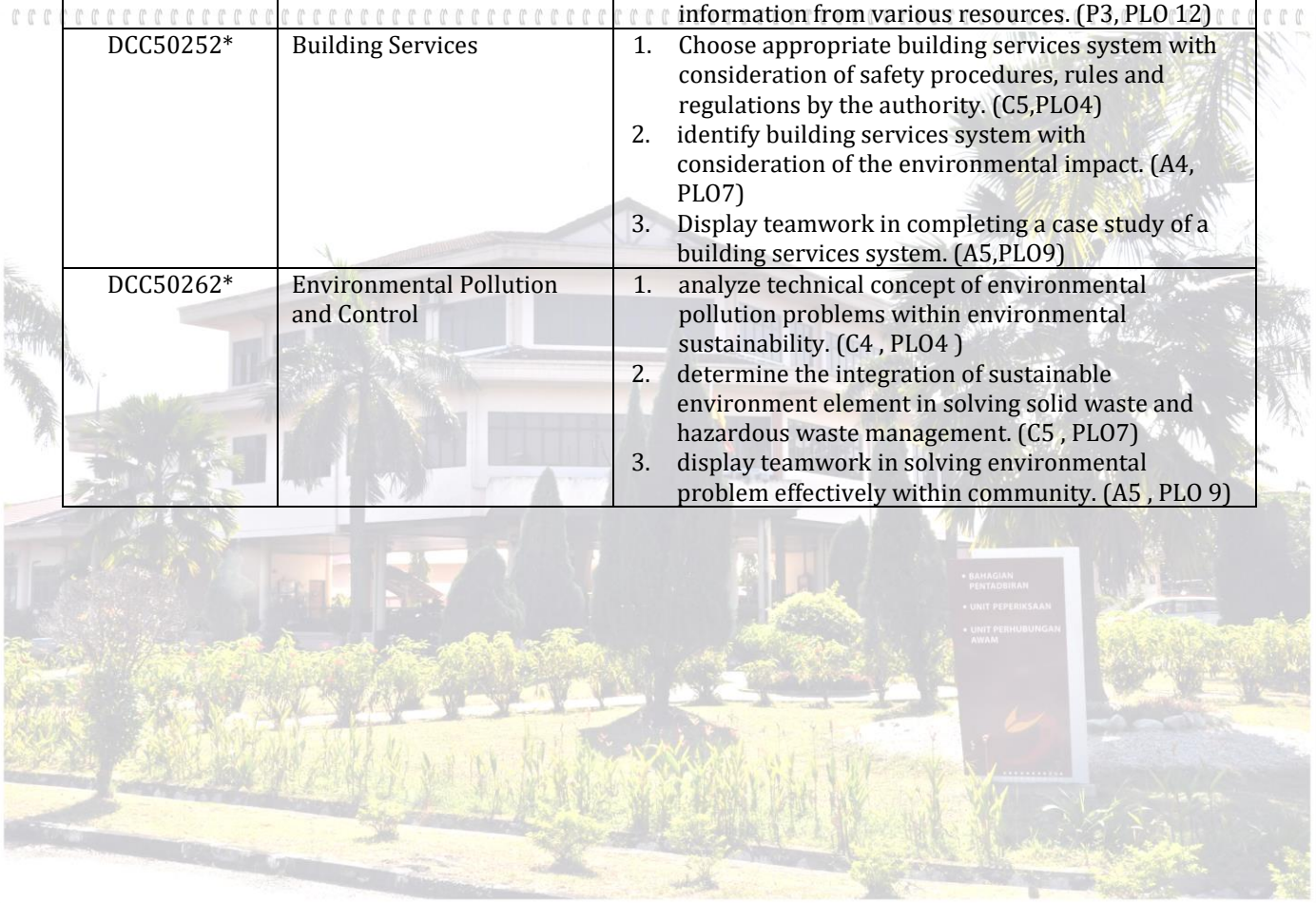
| | | |
|---|---|---|
| | | 4. explain verbally in formal presentation based on assign topic (A3, PLO10) |
| DCC30103 | Highway and Traffic Engineering | 1. apply appropriate model to solve problem in highway and traffic engineering.(C3, PLO1)<br>2. assesses design performance for highway and traffic engineering based on appropriate specification with consideration of public safety, society and environment.(C5, PLO3)<br>3. explain the findings of a case study/assign topic in a formal presentation. (A3, PLO10) |
| DCC30112 | Geotechnical and Highway Engineering Laboratory | 1. construct appropriate instrumentation/ measurement techniques/ models/ simulation in geotechnical and highway engineering using standard procedure and equipment. (P3, PLO5)<br>2. practices the importance of achieving safety in geotechnical and highway according to OSH standard. (A4, PLO5)<br>3. analyse laboratory result in achieving objective of geotechnical and highway using engineering report standard..(C4, PLO4) |
| DCC30122 | Fluids Mechanics | 1. explain the fundamental and principles in fluid mechanics engineering (C2,PLO1)<br>2. determine the principles of fluid mechanics engineering in pipe flow appropriately. (C4,PLO2)<br>3. describe verbally the fundamental and principles in fluid mechanics engineering (A3,PLO10) |



# Course Learning Outcomes Semester 4

| COURSE CODE | COURSE NAME | COURSE LEARNING OUTCOMES |
|---|---|---|
| DUE50032 | Communicative English 3 | 1. Present gathered data in graphs and charts effectively using appropriate language forms and functions. (A2,CLS3b)<br>2. Prepare a high impact resume and a cover letter, highlighting competencies and strengths that meet employer's expectations. (A4,CLS4)<br>3. Demonstrate effective communication and social skills in handling job interviews confidently. (A3,CLS3b) |
| DCC40132 | Project Management and Practices | 1. apply correctly the fundamental engineering concepts of project management. (C3, PLO1)<br>2. manipulate appropriate techniques and software tool for planning and scheduling related to civil engineering activities. (P3 , PLO5 )<br>3. perform efficient management of time and resources in civil engineering field. (A2, PLO11) |
| DCC40142 | Steel Structure Design | 1. design single storey building for steel structure correctly according to Eurocode 3 (C6, PLO3)<br>2. create the design output drawing for single storey steel structure design according to Eurocode 3 using current software. (P5, PLO5)<br>3. adhere to the engineering ethic through presentation. (A4, PLO8) |
| DCC40152 | Water Supply and Waste Water Engineering | 1. apply the concept of water supply and waste water treatment according to related and current standard. (C3,PLO1)<br>2. explain verbally in formal presentation based on given task. (A5, PLO10)<br>3. determine the sustainability and impact of environmental issues regarding to water and waste water treatment. (C5, PLO7) |
| DCC40163 | Theory of Structures | 1. calculate statically indeterminate beams and portal frame using appropriate method. (C3, PLO1)<br>2. analyze joint displacement in statically determinate trusses and internal forces for statically indeterminate trusses correctly. (C4, PLO2)<br>3. evaluate the influence lines for statically determinate beams correctly. (C5, PLO2) |
| DCC40172 | Structure, Hydraulics and Water Quality Laboratory | 1. construct appropriate instrumentation/ measurement techniques/ models/ simulation in structure, hydraulics and water quality engineering using standard procedure and equipment. (P3, PLO5) |

| | | |
|---|---|---|
| | | 2. practice the importance of achieving safety in structure, hydraulics and water quality according to OSH standard. (A4, PLO6)<br>3. analyse laboratory result in achieving objective of structure, hydraulics and water quality using engineering report standard. (C4, PLO4) |
| DCC40181 | Final Year Project 1 | 1. develop the investigation process in civil engineering based in a clear and concise manner. (C3,PLO4)<br>2. complete a presentation for project proposal using an engineering appropriate standard.(A3,PLO10)<br>3. propose appropriate methodology in management and resources based on civil engineering project. (A3,PLO11)<br>4. display self-education skills in gathering technical information from various resources. (P3, PLO 12) |
| DCC50252* | Building Services | 1. Choose appropriate building services system with consideration of safety procedures, rules and regulations by the authority. (C5,PLO4)<br>2. identify building services system with consideration of the environmental impact. (A4, PLO7)<br>3. Display teamwork in completing a case study of a building services system. (A5,PLO9) |
| DCC50262* | Environmental Pollution and Control | 1. analyze technical concept of environmental pollution problems within environmental sustainability. (C4 , PLO4 )<br>2. determine the integration of sustainable environment element in solving solid waste and hazardous waste management. (C5 , PLO7)<br>3. display teamwork in solving environmental problem effectively within community. (A5 , PLO 9) |



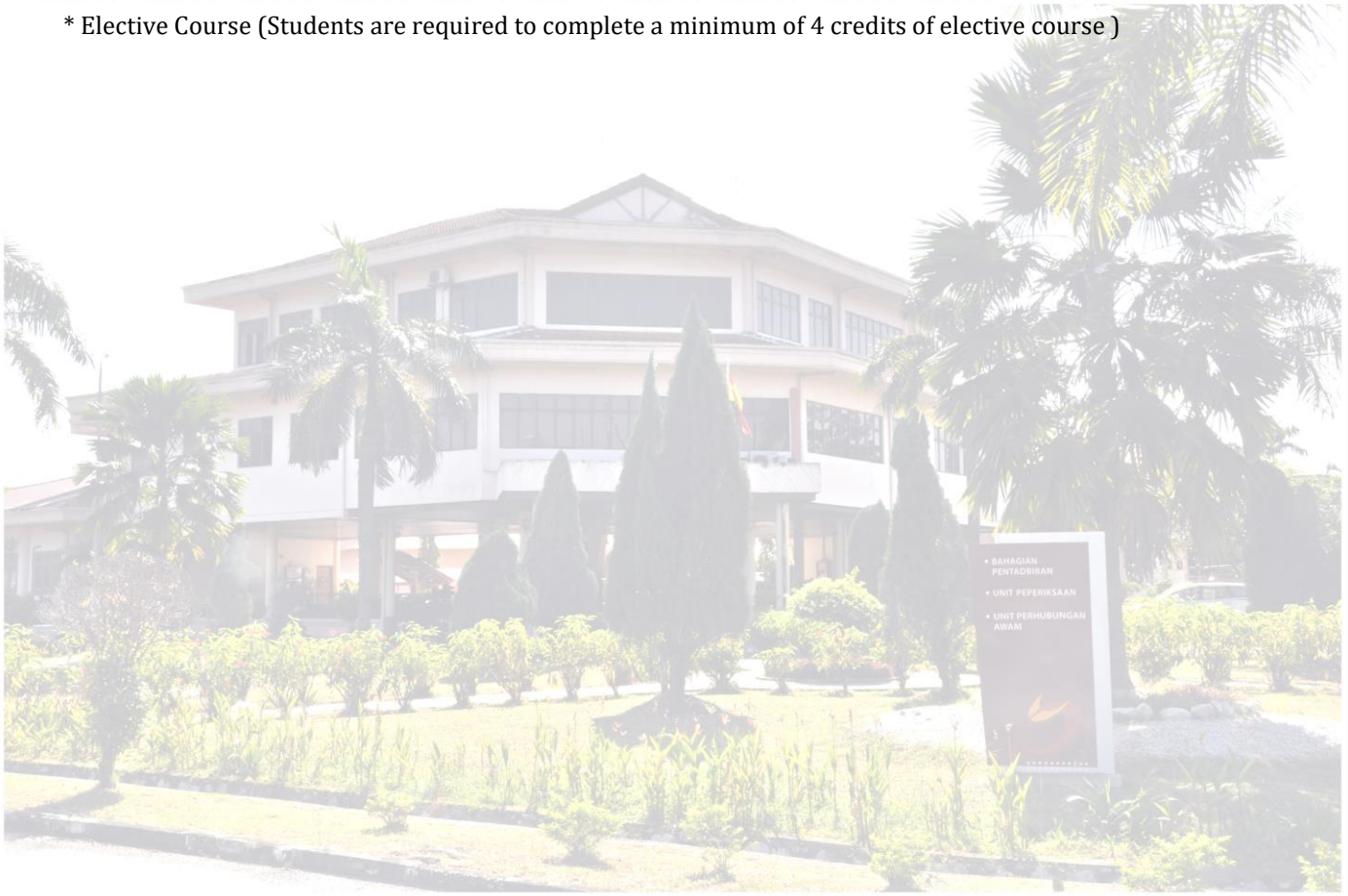
# Course Learning Outcomes Semester 5

| COURSE CODE | COURSE NAME | COURSE LEARNING OUTCOMES |
|---|---|---|
| DCC50194 | Final Year Project 2 | 1. organize the project tasks based on research methodology by using appropriate tools. (P4, PLO 5)<br>2. analyze the project results in achieving objective based on relevant standard and regulation. (C4 , PLO 4)<br>3. :write the project report based on project finding using appropriate format. (C3 , PLO10)<br>4. complete the project presentation confidently and effectively (A5, PLO10) |
| DCC50203 | Reinforced Concrete Design | 1. Design double storey building for reinforced concrete structure correctly according to Eurocode 2. (C6, PLO3)<br>2. Display a safe design for double storey reinforced concrete structure according to Eurocode 2. (P5, PLO5)<br>3. Adhere to the engineering ethic to complete the design task. (A4, PLO8) |
| DCC50212 | Hydrology | 1. apply basic concept of applied hydrology in civil engineering. (C3, PLO1)<br>2. solve problem in applied hydrology for civil engineering. (C4, PLO2)<br>3. construct hydrological analysis using available software. (P3, PLO7) |
| DCC50222 | Hydraulics | 1. explain the fundamental and principles in hydraulic engineering. (C3, PLO1)<br>2. determine the principles of hydraulic engineering in pumps and fluid flow. (C3, PLO2)<br>3. demonstrate the ability to work in team to solve problems on uniform and non-uniform open channel flow. (A3, PLO9) |
| DCC50232 | Engineering in Society | 1. discuss the roles of engineering in society and the duties of maintaining health and safety in the workplace. (A2, PLO6)<br>2. 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) |

| | | |
|---|---|---|
| | | 3. Display skills of self-education and communication techniques in organizing the activities of engineering practice.PA4, PLO12) |
| DCC50242* | Building Information Modeling (BIM) | 1. construct building models using techniques, resources and BIM tools for basic modelling correctly.(P3, PLO5)<br>2. build building models using techniques, resources and BIM tools of 3D model in architecture, structure and plumbing appropriately. (P4, PLO5)<br>3. propose BIM coordination of 3D model consistent with engineering ethics appropriately. (A3, PLO8)<br>4. perform 5D (costing) in project management efficiently. (A5, PLO11) |

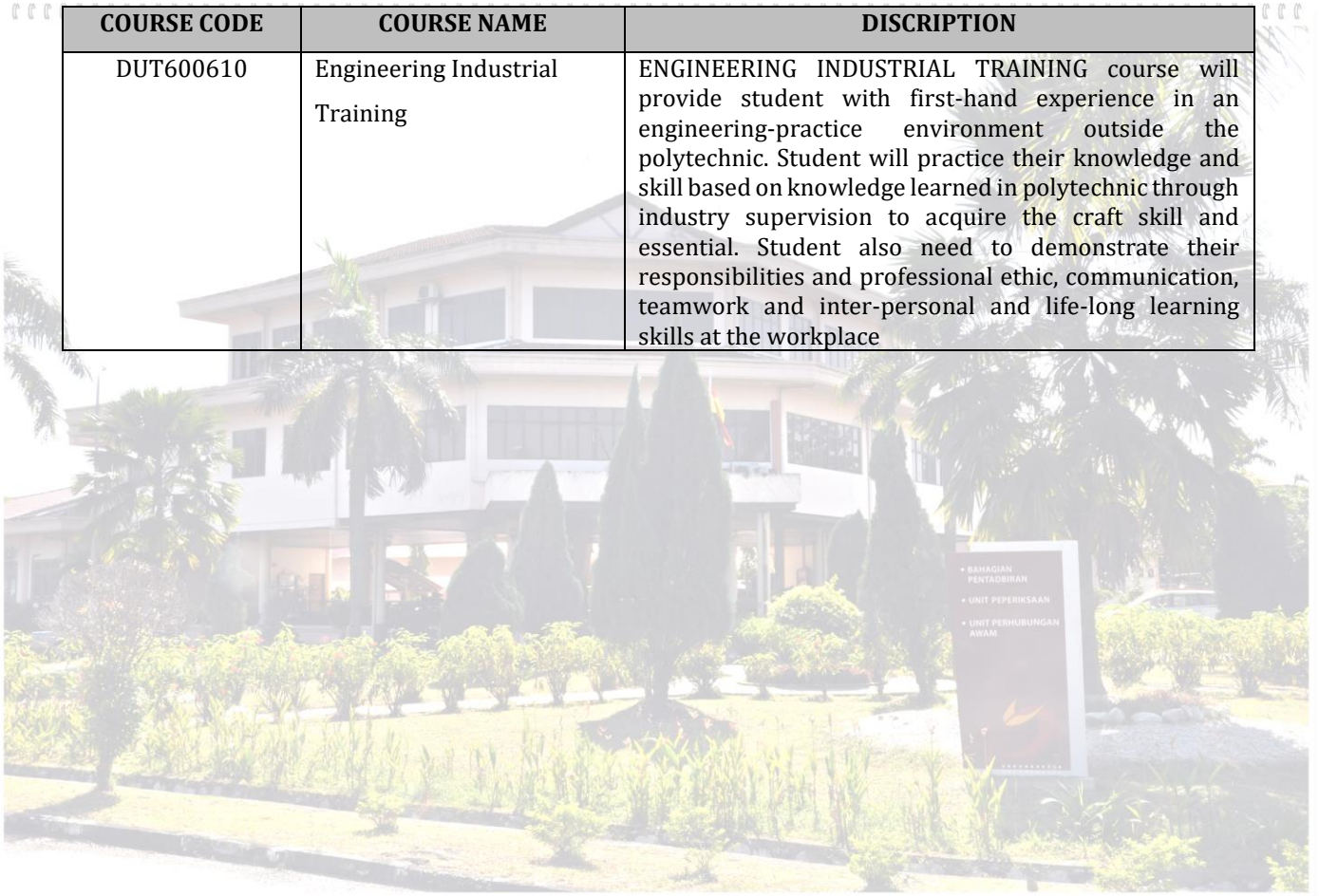
**Legend / Notes :**

* Elective Course (Students are required to complete a minimum of 4 credits of elective course )

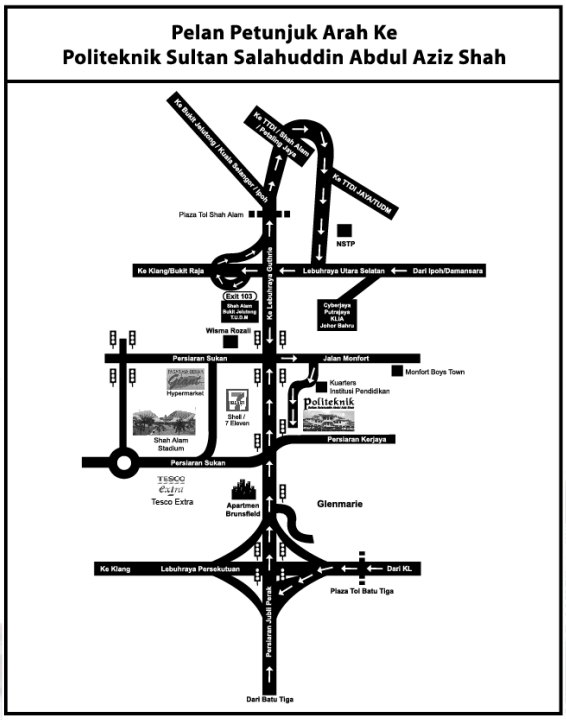


# Semester 6

| COURSE CODE | COURSE NAME | DISCRIPTION |
|---|---|---|
| DUT600610 | Engineering 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 |



## 9.0 POLYTECHNIC SITE MAP




*Nota : Pengguna yang melalui jalan PLUS (NKVE dan ELITE) adalah dinasihatkan supaya menggunakan Tol Bukit Jelutong.

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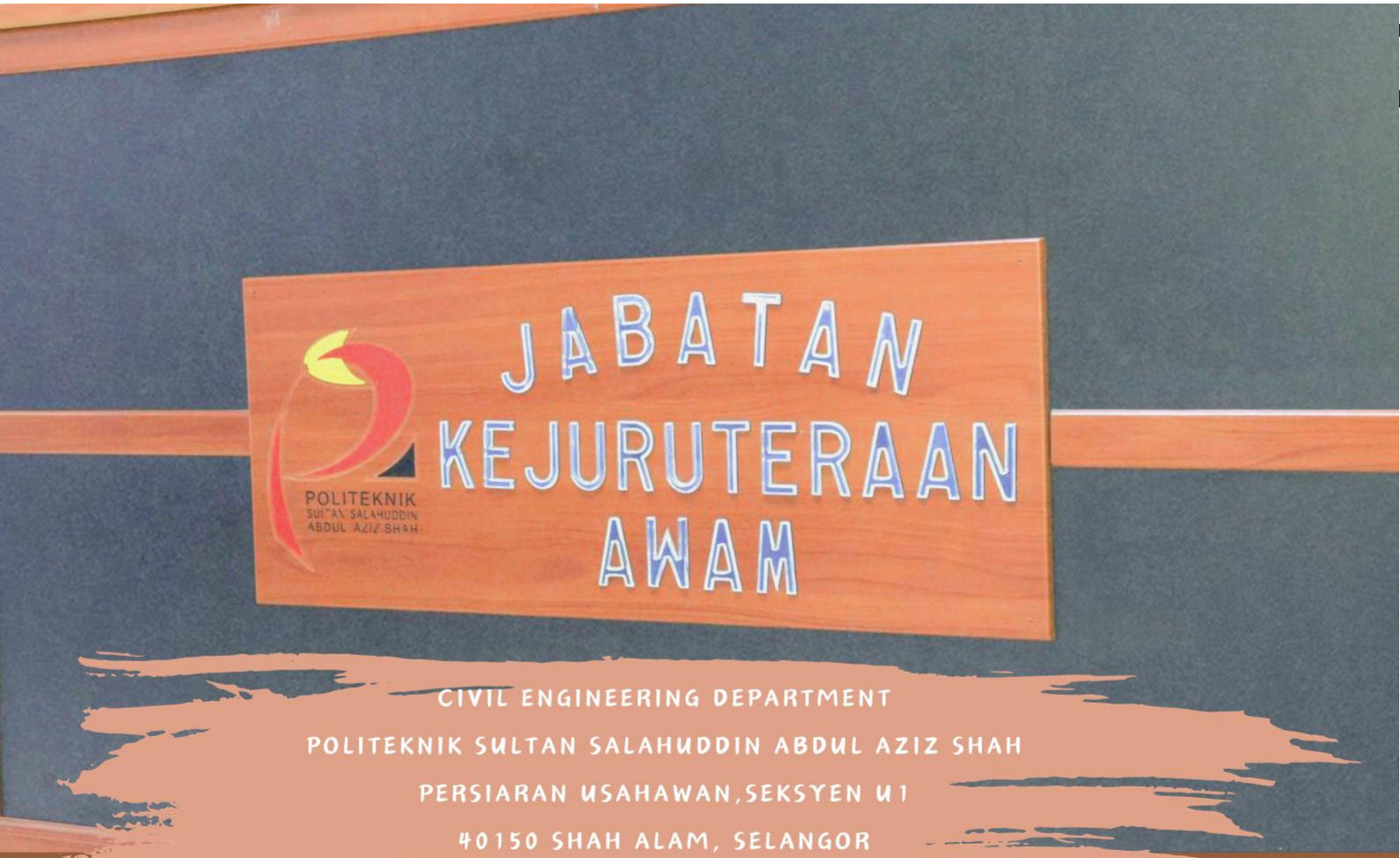
## 11.0 REFERENCES

2015. Diploma in Civil Engineering , Curriculum Developmentand Evaluation Division, Department of Polytechnic Education Ministry of Higher Education Malaysia, Putrajaya.

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# DIPLOMA IN CIVIL ENGINEERING

## *Student's Handbook Version 2019*

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