JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

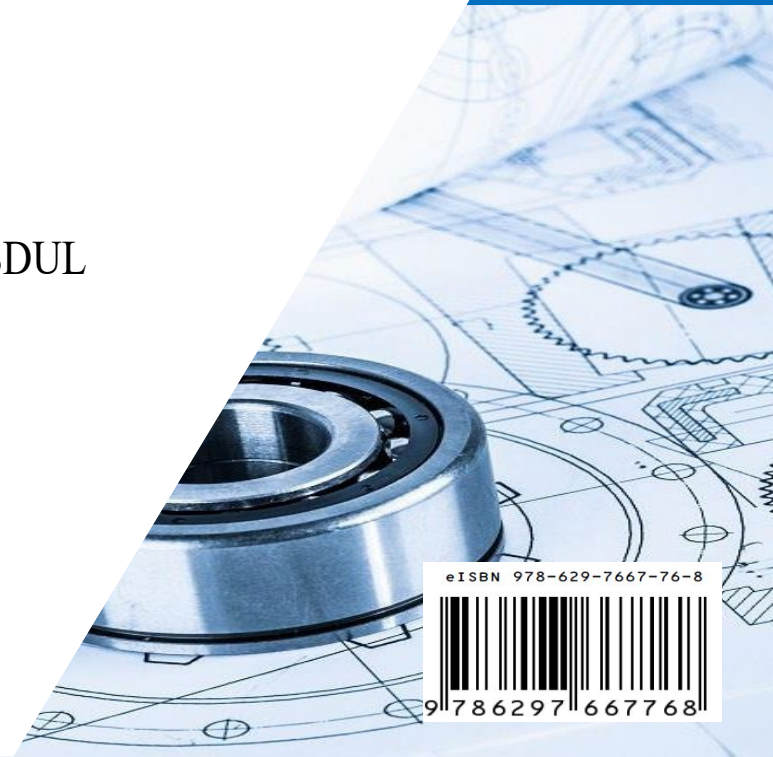
SELF ASSESSMENT REPORT

DIPLOMA IN MECHANICAL ENGINEERING (INDUSTRAL PACKAGING)

DIPLOMA KEJURUTERAAN MEKANIKAL (PEMBUNGKUSAN PERINDUSTRIAN)

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH (PSA)

2025



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SELF-ASSESSMENT REPORT
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POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH (PSA)

2025

Department of Mechanical Engineering
Politeknik Sultan Salahuddin Abdul Aziz Shah
Jabatan Pendidikan Politeknik dan Kolej Komuniti
Ministry of Higher Education Malaysia

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PREFACE

This Self-Assessment Report (SAR) has been prepared for the Diploma in Mechanical Engineering (Industrial Packaging) programme offered by Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA). The report serves as a comprehensive document to demonstrate the programme's commitment towards academic excellence, continuous quality improvement, and compliance with the standards and requirements established by the Engineering Technology Accreditation Council (ETAC), Board of Engineers Malaysia (BEM), and the Malaysian Qualifications Agency (MQA).

The preparation of this report involved the collective efforts and collaboration of the Department of Mechanical Engineering, academic staff, management team, industry partners, students, alumni, and supporting personnel. The report highlights various aspects of the programme, including curriculum development, teaching and learning processes, facilities, student achievements, industry collaborations, quality management systems, and continuous improvement initiatives that support the development of competent and industry-ready graduates.

This SAR reflects PSA's aspiration to remain a leading TVET institution that is responsive to technological advancements and industrial needs, particularly in the field of industrial packaging and mechanical engineering. It is hoped that this report will provide clear evidence of the programme's strengths, achievements, and future direction in producing holistic, skilled, and competitive graduates who are able to contribute effectively to the nation's industrial and economic development.

The Department of Mechanical Engineering would like to express its sincere appreciation to all individuals and organizations who have contributed directly and indirectly towards the successful preparation of this report.

Department of Mechanical Engineering
Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA)
2025

TABLE OF CONTENT

C7 Quality Management System

DEFINITIONS

Acronyms

OI Other Information

AAS	=	Academic Advisory System
APACC	=	Asia Pacific Accreditation and Certification Commission
BEM	=	Board of Engineers Malaysia
CAC	=	Curriculum Advisory Committee
CDC	=	Curriculum Development Committee
CDD	=	Curriculum Development Division
CDIO	=	Conceive, Design, Implement & Operate
CGPA	=	Cumulative Grade Point Average
CIDOS	=	Curriculum Information Document Online System
CISEC	=	Corporate Industrial Services & Employment Center
CIST	=	Course Item Specification Table
CLO	=	Course Learning Outcomes
CPCM	=	Career Path Competency Matrix
CSR	=	Corporate Service Responsibility
DMP	=	Diploma in Mechanical Engineering (Packaging)/(Industrial Packaging)
FEIST	=	Final Exam Item Specification Table
FRGS	=	Fundamental Research Grant Scheme
GPA	=	Grade Point Average
HEP	=	Student Affairs Department
HLP	=	Hadiah Latihan Persekutuan (Federal Training Award)
HOC	=	Head of Centre
HOD	=	Head of Department
HOP	=	Head of Programme
HOU	=	Head of Unit
HRMIS	=	Human Resourses Management Information System
ICT	=	Information and Communication Technology
IEM	=	Institute of Engineers Malaysia
IHL	=	Institute of Higher Learning
JKM	=	Mechanical Engineering Department
JPA	=	Jabatan Perkhidmatan Awam (Mechanical Engineering Department)
JPK	=	Jabatan Pembangunan Kemahiran
JPPKK	=	Jabatan Pendidikan Politeknik dan Kolej Komuniti
JSKK	=	Department of Sports, Co-Curriculum and Culture
MAMPU	=	Malaysian Administrative Modernisation and Management Planning Unit
MOE	=	Ministry of Education
MOOC	=	Massive Open Online Course
MQA	=	Malaysian Qualification Agency
OBE	=	Outcome Based Education
PB	=	Pusat Bertauliah
PCB	=	Polytechnic Curriculum Board
PEO	=	Program Educational Objectives
PEO	=	Programme Educational Objectives
PPK	=	Program Peningkatan Kemahiran (Skill Development Programme)
PPRN	=	Private Public Research Network
PSA	=	Politeknik Sultan Salahuddin Abdul Aziz Shah
SKM	=	Sijil Kemahiran Malaysia
SLTP	=	Skim Latihan Tenaga Pengajar (Teaching Staff Training Scheme)

SPAk = Sistem Penasihatan Akademik
SPMP = Sistem Pengurusan Maklumat Pelajar
SPPA = Asset Observation Management System
T&L = Teaching & Learning
TECC = Technology Enable Collaborative Class
TVET = Technical and Vocational Education and Training
3P2K = Polytechnic and Community College study Program Subcommittee

LIST OF TABLES

LIST OF FIGURES

General Information	
Figure No.	**Title**
G1-1a	PSA Main Campus
G1-1b	Statement of Vision & Mission PSA
G1-1c	Statement of Quality Policy, Motto & Tagline of PSA
G1-1d	Total Number of Graduates between 1999 and 2025
G1-1e	The Organizational Chart of JKM
G1-1f	Organizational Chart of the DMP Programme
G1-1g	Academic Calendar for 2025/2026

C1 Programme Educational Objectives	
Figure No..	**Title**
C1-4a	Flowcharts of Curriculum Development Process in Polytechnics
C1-5a	Flowcharts of periodic review and revised of PEO

C2 Programme Learning Outcomes	
Figure No.	**Title**
C2-5a	Flowchart of Developing FEIST Process
C2-5b	Flowchart of Generate CORR and PLORR using i-EXAM, SPMP
C2-5c	PLO Achievement for complete cohorts of Dis 2019 Session DMP students by curriculum version June 2019
C2-5d	PLO Achievement for complete cohorts of SesI 2:2024/2025 DMP students by curriculum version June 2019
C2-5e	Shows comparison PLO achievement summary between cohort Sesi 2: 2023/2024 and Sesi 2: 2024/2025 as they are using curriculum version June 2019.
C2-5f	S3P interface
C2-6a	CQI Process at Course and Programmed Level
C2-6b	Course Outcome Review Report (CORR)
C2-6c	Program Learning Outcome Review Report of DKM(PLORR)
C2-7a	Types Of Assessments Used For Evaluation

C3 Academic Curriculum	
Figure No.	**Title**
C3-1a	Body of Knowledge for all programmes in polytechnic
C3-1b	Body of Knowledge of Mechanical Engineering

C7 Quality Management System	
Figure No.	**Title**
C7-1a	The Organizational Chart of the Department of Polytechnic and Community College Education (JPPKK)
C7-1b	Organizational Chart of PSA Management
C7-1c	The Organizational Chart of JKM
C7-2a	Quality Assurance Process of Polytechnic Education System
C7-2b	Academic Committee
C7-2c	Academic Support Committee
C7-2d	PSA Management Model
C7-2e	PSA PDCA - Management Model

***LIST OF APPENDIXES*:**

C7-2f	Professional Development of Academic Staff
C7-3a	Guidelines for Curriculum Development and Review of Polytechnics and Community Colleges
C7-3b	Curriculum Development Process Flowchart
C7-3c	Flowchart of Curriculum Review Process
C7-3e	Mechanism for responding to External Examiners Comments.
C7-3f	Mechanism Continual Improvement of the Quality System
C7-6a	Workflow of Moderation Process for Examination Papers
C7-7a	Organizational Chart of UPKES
C7-8a	Unit Quality Management Committee
C7-8b	Organizational Chart of the Internal Audit Unit of PSA

LIST OF APPENDIXES

General Information	
Appendix	**Title**
G1-1a	Organisation's Chart PSA 2025
G1-1b	Mission and Vision Official Letter
G1-1c	Sample Of The Grant Offered Letter
G1-1d	PolyRate Rating
G1-1e	ETAC Accreditation Letter
G1-1f	APAC Gold Award accreditation
G1-1g	ISO 9001:2015 Certification
G1-1h	ISO 45001:2018 certification
G1-1i	PSA Strategic Plan 2021-2025 For Intelligent Campus
G1-1j	SKM Draftsman Full Certification
G1-1k	SKM Micro credential Certification
G1-1m	Strategic direction of IMET
G1-2a	MQA Accreditation Status
G1-2b	ETAC Accreditation
G1-3a	Curriculum Change
G1-3b	Curriculum Changes For Course Structure

C1 Programme Educational Objectives	
Appendix	**Title**
C1-2a	Student Study Guide
C1-2b	PEO's Poster For Mechanical Engineering Department
C1-2c	Course Outline
C1-4a	Curriculum Development Committee (CDC)
C1-4b	Curriculum Advisory Committee (CAC)
C1-4c	Sub Committee 3P2K
C1-4d	Polytechnic Curriculum Board (PCB)
C1-5a	Garis Panduan Kajian PEO
C1-5b	Questionnaires PEO Curriculum Jun 2019 for Alumni
C1-5c	PEO performance indicators for DMP
C1-5d	PEO Data Analysis Report for Curriculum Year 2019
C1-5e	Official Letter of The PEO Attainments
C1-5f	Questionnaires PEO Curriculum Jun 2019
C1-5h	PEO Minute Meeting

C2 Programme Learning Outcomes	
Appendix	**Title**
C2-5a	Final Examination Item Specification Table (FEIST)
C2-5b	Course Item Specification Table (CIST)
C2-6a	Course Outcome Review Report (CORR)
C2-6b	Continuous Quality Improvement (CQI)
C2-6c	*Laporan Pencapaian Hasil Pembelajaran Program* (PLORR)
C2-6d	ePNP Report

LIST OF APPENDIXES:

C3 Academic Curriculum	
Appendix	**Title**
C3-1a	Etac Entry Requirement
C3-1b	Non-Engineering Courses For DKM/DMP
C3-1c	Technical Courses / Engineering Related Courses for DMP
C3-1d	Programme Structure For Diploma in Mechanical Engineering (Packaging)
C3-1e	Mapping of DMP 's POs to the ETAC Knowledge Profile (DK), Well-Defined Problem Solving (DP) and Well-Defined Engineering Activities (NA).
C3-1f	Mapping of DKM's courses to the ETAC Knowledge Profile (DK), Well-Defined Problem Solving (DP) and Well-Defined Engineering Activities (NA)
C3-2a	Teaching & Learning (T&L) and Assessment Methodologies
C3-2b	Assessment Rubric Project 1
C3-2c	Assessment Rubric Project 2
C3-2d	Final Year Project Guide Book
C3-2e	Industrial Training Rubric Assessment
C3-2f	Blended Learning Distribution Table (BLDT)
C3-2g	Blended Learning Fulfilment Record (BLFR)
C3-2h	PPI Guide Book
C3-2i	List of Industry Visiting Lecturer for Diploma in Mechanical Engineering Programme
C3-2j	Percentage Distribution between Continuous Assessments and Final Examination
C3-2k	Course Assessment Specification Table (AST) for DJJ40142 Mechanical Workshop Practice 4
C3-2l	Course Item Specification Table (CIST) for DJJ30093 Engineering Mechanics
C3-2m	Final Examination Specification Table (FIEST) for Strength of Material
C3-2n	Moderation Process for Assessment on Final Examination Papers and Marking Schemes
C3-2o	Grading System for the Polytechnic
C3-2p	Minimum passing rate for both continuous assessment and final assessment/ final examination 2023
C3-2q	Grading system fot the polytechnic Surat Punca Kuasa
C3-6a	Labsheet

C4 Students	
Appendix No.	**Title**
C4-1a	Panduan Pengambilan dan Pengurusan Pelajar Politeknik
C4-1b	Poster Hebahan Iklan Kemasukan Sesi I 2025_2026
C4-1c	Syarat Kemasukan
C4-2a	Guidelines for Credit Transfer and Course Exemption For Polytechnic Programme
C4-2b	Notification of Exchange of Polytechnic Students with the Same Program
C4-2c	Amendment on the credit transfer requirement 19th August 2016
C4-2d	Surat Pemakluman Penambahbaikan Borang Pemetaan Garis Panduan Pemindahan Kredit dan Pengecualian Kursus Edisi 2020
C4-3a	Psychology and Counselling Services offered by UPP

C4-3b	Organizational Chart of the Unit Pengurusan Psikologi
C4-3c	Jawatankuasa AKRAB PSA
C4-3c	Guidelines for Implementation Academic Advisory System (SPAk) Edition 2022
C4-4a	Senarai Fasiliti Sukan PSA
C4-4b	Laporan Bengkel Interpretasi Kurikulum, OBE dan Pembinaan Rubrik
C4-5a	Arahan Peperiksaan dan Kaedah Penilaian POLYCC Edisi 1 2025
C4-5b	Example of SLT Calculation
C4-6a	Carta Organisasi JPP PSA 2025
C4-6b	Appendix C4-6b Program Anjuran JPP PSA 2025
C4-6c	Carta Organisasi PPJ JKM 2025
C4-6d	Program Yang Dilaksanakan Oleh PPJ JKM 2024 & 2025
C4-6e	Pembimbing Rakan Siswa Organization Chart
C4-6f	Activities Carried Out by PRS 2025
C4-6g	Program Yang Dilaksanakan Oleh Kelab MECHTECH 2025
C4-6h	Carta Organisasi Kelab Mectech
C4-6i	Carta Organisasi RaPI Sesi 1 2025_2026
C4-6j	Activities Carried Out by RAPI for 2024 & 2025
C4-6k	Carta Organisasi JPKK
C4-6l	Pelaksanaan Program JPKK
C4-7a	Buku Panduan Pelaksanaan Projek Pelajar (Program Diploma) Politeknik Malaysia Edisi 2021
C4-7b	Penguatkuasaan Penggunaan Buku Panduan Pelaksanaan Projek Pelajar (Program Diploma) Politeknik Malaysia Edisi 2021
C4-7c	Laluan Kokurikulum Berkredit
C4-7d	Senarai Pelajar JKM Terlibat Sukan 2025
C4-7e	Pencapaian Pelajar JKM
C4-7f	Buku Panduan Sistem Penasihatan Akademik (SPAk) EdisiI 2022
C4-7g	Taklimat Tajaan Sesi 1 2025 /2026

C5 Teaching and Support Staff	
Appendix No.	**Title**
C5-1a	Table Competency Matrix DMP Staff
C5-1b	Analysis of all Teaching staff
C5-1c	Industry Certification/Competency/Professional Certificate
C5-2a	Teaching Staff Teaching Workload Summary for the Current Semester (Session I 2025/2026))
C5-2b	Summary of Staff Involvement in Research /Publication /Presentation /Consultancy Activities
C5-2c	List of Invited Professional Speakers From Industries An Academic Visit Of Mechanical Engineering Department
C5-2d	Planning And Implementation Of Collaborative
C5-5a	Summary of Staff Training Activities
C5-5b	Application For Os29000 Training Allocation For The Year 2026
C5-6a	Summary of Staff Involvement in Consultancy

***LIST OF APPENDIXES*:**

C6 Facilities	
Appendix No.	**Title**
C6-1a	List of Equipment
C6-1b	List of Course Involving with Practical Work
C6-1c	Library Operation Time
C6-1d	Reference Materials to Support Programme
C6-1e	Description of E Government Application
C6-1f	ICT PSA Staff Qualifications
C6-1g	Licensed software
C6-3a	List of Sports and Recreational Facility and Infrastructure
C6-3b	Details of the vehicles at PSA and List of Drivers Name
C6-3c	Objectives of TECC

C7 Quality Management System	
Appendix No.	**Title**
C7-3a	Pelawaan Hlp Untuk Sesi 2024-2025
C7-4a	Engineering Technology Accreditation Council External Examiner Report
C7-4b	Feedback for EE Report
C7-4c	Minutes of Industry Advisory Panel (IAP) Meeting
C7-4d	Feedback for Industry Advisory Panel (IAP) Minutes of Meeting
C7-5a	Benchmarking Report

***LIST OF APPENDIXES*:**

Supporting Material Document
Title
Curriculum Vitae (CV)
Delivery Method
Lists of E-Book
External Examiner's Report
Minutes Meeting IAP

Institutional Documents and Additional Documentation
Title
IHL Documents
Course File
Final Project Report
Industrial Training Report
Laboratory Report
Quality Assurance Records
External Examiner and Advisory Board

G1-1 Provide general information on the IHL and the specific programme together with academic calendar.

A. History and Background of Polytechnic

Polytechnic education was first introduced in Malaysia by establishing its first Polytechnic, Ungku Omar Polytechnic, in Ipoh, under the United Nations Development Plan in 1969. The need to provide broader access to technical education and training for the country was given prominence by the Cabinet Committee on Education in 1979 and the first National Industrial Master Plan (1985– 1995). All plans, including the Cabinet Committee's certificate on training (1991), have enabled the establishment of more Polytechnics and added study programs in engineering, commerce and services. On 20 November 2009, the Cabinet of Ministers approved a Memorandum from the Minister of Higher Education in relation to the Polytechnic Transformation Direction involving the following four cores:

First: Empower polytechnics towards becoming an option comparable to public universities;
Second: Develop study and research programs in the field of propulsion that rely on the strengths of each polytechnic;
Third: Empower polytechnic citizens with high knowledge and skills;
Fourth: Build a highly reputable image of an excellent work culture.

In addition, the Cabinet of Ministers on 26 March 2010 considered the Memorandum from the Minister of Higher Education agreeing to establish ten METrO Polytechnics, four polytechnics in the 9th RM and six polytechnics in the 10th RM. The Cabinet established and implemented community colleges in each parliamentary constituency on 5 July 2000. However, in 2005, the Cabinet reconsidered the concept and agreed that establishing community colleges should be based on the local area's needs. In 2007, the Cabinet of Ministers decided that community colleges should be made Lifelong Learning hubs. In addition, in 2014, the Council of Ministers took note of the implementation of the Lifelong Islamic Education (PISH) program at community colleges.

To strengthen the role of Polytechnics and Community Colleges in education and training, on 24 March 2017, the Cabinet approved the merger of Polytechnics and Community Colleges into one department. The new organizational structure of the Jabatan Pendidikan Politeknik dan Kolej Komuniti (JPPKK) was approved by the Public Service Department (JPA) on 23 February 2018.

B. History and Background of Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA)

Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA), formerly known as the Politeknik Shah Alam, was built on 112 acres of land in the state of Selangor. PSA is the eighth polytechnic in Malaysia under the World Bank Program. In March 2002, PSA was renamed Politeknik Sultan Salahuddin Abdul Aziz Shah in honour of the late DYMM Seri Paduka Baginda Yang Di Pertuan Agong XI. Sultan Selangor, Sultan Sharafuddin Idris Shah, conducted the renaming ceremony.

PSA commenced its administrative activities in January 1997 and successfully enrolled 640 students during its first enrolling session. The primary focus of PSA's activity is the implementation of the semi-professional learning and teaching process at the level of certificates, diplomas and advanced

diplomas in engineering and commerce studies. With six academic departments consisting of the Department of Mechanical Engineering (JKM), Department of Civil Engineering (JKA), Department of Electrical Engineering (JKE), Department of Commerce (JPG), Department of Mathematics & Computer Science (JMSK) and Department of General Studies (JPA), PSA is prepared to offer quality academic programmes through professional and trained academic staff. **Figure G1-1a** shows the administration block and main building of PSA, while **Table G1-1a** comprises general information about PSA.

Figure G1-1a: PSA Main Campus

Name of IHL	Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA)
Address of IHL	Persiaran Usahawan, Seksyen U1, 40150 Shah Alam, Selangor
Name of IHL Director	Ts. Dr. Ahmad Aftas bin Azman (Acting)
Name of IHL Deputy Director (Academic)	Ts. Dr. Ahmad Aftas bin Azman
Name of IHL Deputy Director (Academic Support)	Dr. Sulaiman bin Mohammed Khalid
IHL Academic Session	Session 1 2025/2026
URL Address; IHL website	https://psa.mypolycc.edu.my/

Table G1-1a: General Information of PSA

PSA, a higher education institution under the purview of JPPKK, is placed under the authority of MoHE, Malaysia. This institution advocates technical education and vocational programmes for Malaysian students. It is vital in producing semi-professional workers for the engineering and commercial industries in Malaysia's private and public sectors. The organizational chart of PSA is shown in **Appendix G1-1a**.

C. Mission, Vision and Motto of PSA

PSA Mission and vision synchronize with JPPKK based on official letter shown in **Appendix G1-1b**.

V**ision**

"To be the Leading-Edge TVET Institution"

Mission

This mission can be divided into four important components which are:
1. To provide wide access to quality and recognized TVET programmes.
2. To empower communities through lifelong learning.
3. To develop holistic, entrepreneurial and balanced graduates.
4. To capitalize on smart partnership with stakeholders

Motto

"The Preferred Polytechnic"

Quality Policy

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

Tagline

Great Future @ PSA
Passionate. Synergize. Agile

Figure G1-1b & **Figure G1-1c** is a statement of PSA's vision, mission, motto as well as tagline that has been disseminated to all PSA citizens as well as public announcements. The publicity medium used includes the PSA website, social media platforms and posts in each department, centers and units throughout the PSA.

Figure G1-1b: Statement of Vision & Mission PSA

Figure G1-1c: Statement of Quality Policy, Motto & Tagline of PSA

D. Graduates of PSA

Over the years, PSA has proudly organised 27 convocation ceremonies, signifying its long-standing commitment to producing skilled graduates. From 1999 until 2025, PSA has produced a total of 45,225 graduates across diverse engineering and commerce disciplines, as shown in **Figure G1-1d**. According to the BPN portal, the number of officially recorded graduates stands at over 40,000, further reflecting PSA's strong contribution to the nation's skilled workforce. Additionally, PSA currently enrolls approximately 3,758 active students, supported by 426 academic and administrative staff, across 15 different programmes.

Diploma in Mechanical Engineering (Industrial Packaging) (DMP) programme alone has produced 1,626 graduates since its first convocation in 2001. On top of that, the Techno-Huffaz programme (launched in 2017) for students in Business Studies, Civil, Mechanical, and Electrical Engineering has produced 16 dual-certificate graduates (Diploma + Tahfiz Sijil) and will welcome 19 new students in the upcoming 2025/2026 session. These achievements not only demonstrate PSA's role as a leading polytechnic in Malaysia but also its alignment with the national TVET agenda and the Polytechnic Transformation Roadmap 2023–2030, ensuring the continuous supply of future-ready graduates to meet evolving industry demands.

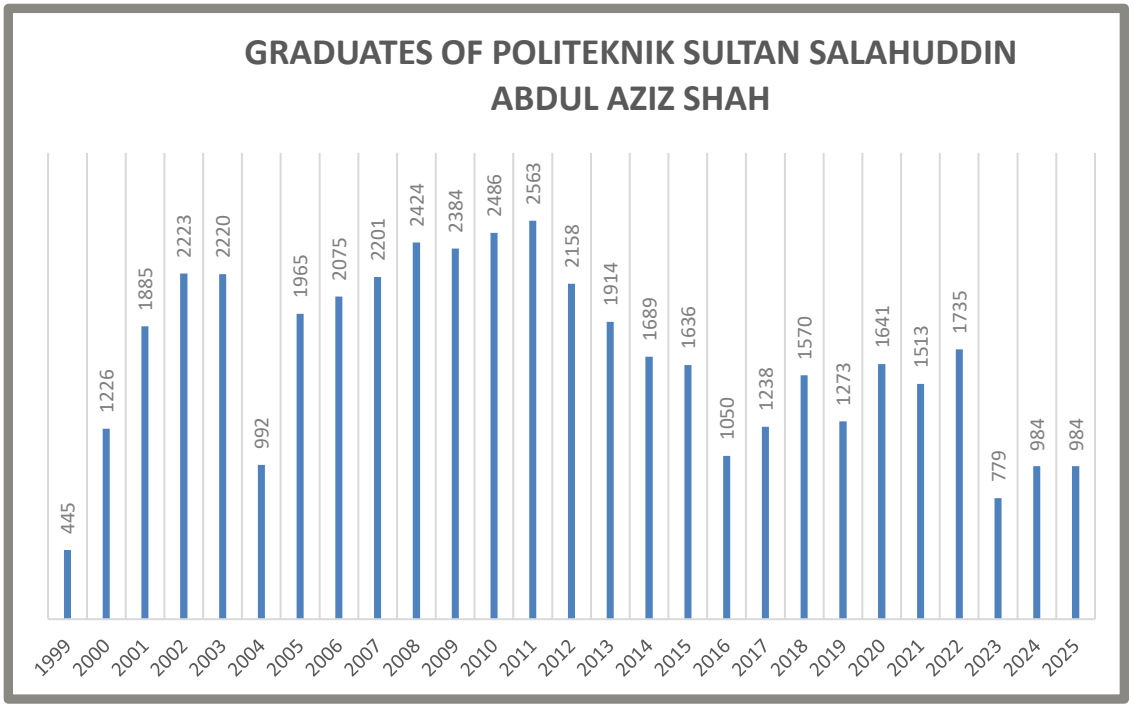


Figure G1-1d: Total Number of Graduates between 1999 and 2025

E. Collaboration with the Industries

PSA is actively strengthening collaborations with companies, institutions, and industries through a broad spectrum of impactful initiatives. These collaborations are not confined merely to the signing of Notes of Understanding (NOUs) but are further expanded into various meaningful programs at the departmental level. Among the notable initiatives are lecturer industrial attachments that enhance academic staff exposure to current industrial practices, student-industry joint projects that nurture innovation and applied problem-solving skills, the involvement of industry representatives as evaluators for student projects to ensure alignment with industrial expectations, industry experience sharing sessions that enrich students with real-world insights, and structured industrial visits that connect classroom learning with practical applications. Beyond these, PSA's dynamic academic staff are also deeply involved in research, course delivery, and consultancy services with industry partners, which further reinforce the integration of academic expertise with industrial needs. The overarching aim of these collaborations is to establish a sustainable and holistic platform for mutual knowledge exchange, capacity building, and professional development, ultimately benefiting both PSA and its industry partners. Comprehensive details of these collaborations, including NOUs and departmental-level initiatives, are presented in **Table G1-1b.**

NO	YEAR	NAME	COMPANY/INSTITUTION/INDUSTRY
JABATAN KEJURUTERAAN MEKANIKAL			
1	2023-2024	En. Muhd Nur Naimullah Bin Mohammed Ghazali	Bateriku (M) Sdn. Bhd
2		En. Abd Halim bin Yacob	Pusat Reka Bentuk Pembungkusan dan Keselamatan, Sirim Berhad
3		En. Muhammad Hafiezul Fais bin Mohd Jahis	BEM Cooler Enterprise
4		En. Mahathir bin Muhamed	Sinar Marimas Enterprise
5		En. Muhammad Zaim bin Rosli	Top Glove Sdn Bhd
6		Muhammad Asif Bin Zulkifli	Zul Design Sdn. Bhd
7		Prof Dr. Zaidatun Binti Tasir	Fakulti Sains Sosial UTM, Skudai
8		TS. Dr Zulkifli Bin Mahmoodin	Unikl-BMI
9		Ts Dr Mohd Ridhuan Mohd Jamil	Fakulti Pembangunan Manusia, UPSI
10		Mr Saw Ewe Chai	Tetra Pak Sdn. Bhd
11		Mr. Tan Tuck Wong	GS PaperBoard and Packaging Sdn. Bhd
12		Mr. Melvin	Gentle Solution Sdn. Bhd
13		Ts. Norsham Ismail	IdeasCad Technologies Sdn Bhd
14		Nazran Asyraff Mohd Najib	Tabung Warisan Khas kesihatan - Management (TWKK MANAGEMENT)
15		Ybhg. Dato' Indera Dr Ahmad Sabirin Arshad, FASc	Sirim Berhad
16		En. Ahmad Zaidi Bin Md. Zain	Ktpc Technologies Sdn. Bhd.
17		Mohd Shabuddin Bin Mat Hassan	Indsys Engineering Sdn. Bhd.

18		En. Mohd Fadhil bin Aziz	Panasonic Appliances Air Conditioning Malaysia Sdn Bhd
19		Noorazli Bin Torjie	Top-Mech Provincial Sdn. Bhd
20		Dr Izhar Abd Aziz	3d Gens Sdn. Bhd.
21		Dr. Thoufeili Taufek	Feiran Technology Sdn. Bhd
22		Mohd Arbain B. Mohd Yahaya	Pautan Legasi Sdn. Bhd.
23		Shamsul Nizam Bin Abdul Rahman	Johor Petroleum Development Corporation Berhad
24		En. Mohd Ashraf Bin Mohd Ibrahim	Petronas Global Technical Solutions Sdn. Bhd.
25		Ts. Muhammad Faqrul Reduan	HICOM Diecastings Sdn. Bhd.
26		Encik Fahmi Bin Idris	Helio Solutions Sdn. Bhd.
27	2021-2022	Prof IR TS DR Ing Yupiter Hp	SMRI, UITM Shah Alam
28		Prof IR TS DR Aminuddin Bin Abu	MJIT, UTM Kuala Lumpur
29	2016 - 2022	Dato' Mokhtar Bin Salleh	Panasonic Appliances Air Conditioning Malaysia Sdn Bhd
30		Michelle Hah	Fire Fighter Industry Sdn Bhd
31		Noorazlie Torje	Top Mech Provincial Sdn Bhd
32	2018 - 2020	Fahmi Bin Idris	Helio Solutions Sdn Bhd
33	2020 - 2022	Ahmad Zaidi Bin Md Zain	KTPC Technologies Sdn Bhd
34		Eamienor Zakiah Bt Md Zuki	Persekutuan Orang Pekak Malaysia (MFD)
35		Mohd Shabuddin Bin Mat Hassan	Insdsys Engineering Sdn Bhd
36		Zawawi Hj Effendi	TUV NORD (Malaysia) Sdn. Bhd
37		Rosman Bin Ahmad	TWI ABM Training & Certification Sd.Bhd

Table G1-1b: List of the Companies, Institutions and Industries Collaborating with PSA (JKM Section)

F. PSA Achievements

As part of its strategic direction, PSA has defined five core institutional thrusts that reflect both its achievements and its future orientation:

i. Research & Innovations
ii. Accreditations
iii. Intelligent Campus
iv. Pusat Bertauliah (PSA)
v. Institute of Medical Engineering Technology (IMET)

In 2016, PSA achieved 52 awards in various research and innovation competitions, including the Public Private Research Network (PPRN) Fund. From 2018 to 2020, nine research projects successfully received T-ARGS and F-RGS grants amounting to RM84,000, with the involvement of 38 lecturers from different academic departments.

In 2025, PSA further strengthened its research profile by securing two T-ARGS grants, two T-AIGS grants, and two T-ACGS grants, all of which are recognised as TVET research grants that support applied and industry-driven innovation. Collectively, these six research grants amounted to an impressive RM340,790, marking a significant milestone in PSA's research funding achievements. In addition, PSA also obtained three Social Research Fund recipients, with a total value of RM140,327.50, further showcasing the breadth of research endeavours undertaken by its academic staff. **Appendix G1-1c** shows a sample of the 2025 grant offer letter, while **Appendix G1-1d** lists the recipients of the 2025 research grants. The Department of Mechanical Engineering (JKM) was involved in three of these grants, demonstrating the strong commitment and expertise of its staff, and showing that JKM is equally competitive in contributing to PSA's research excellence at the national level.

PSA successfully achieved a new cycle of accreditation from the Engineering Technology Accreditation Council (ETAC) in 2025 for the Diploma in Mechanical Engineering (Industrial Packaging) (DMP) programme. The programme has been granted a full six-year accreditation with interim monitoring, reaffirming its compliance with the rigorous standards set by ETAC under the Board of Engineers Malaysia (BEM). This outstanding accomplishment demonstrates the unwavering commitment, dedication, and collaboration of the academic and support staff involved in the programme, whose collective efforts ensured that the highest benchmarks of quality were attained and sustained. Evidence of this accreditation result is provided in **Appendix G1-1e**.

PSA has proudly achieved international recognition through the Asian Pacific Accreditation and Certification Commission (APACC), being awarded the prestigious Gold Award accreditation twice — first in 2015 and later in 2021. This remarkable milestone not only highlights PSA's consistency in maintaining world-class standards but also demonstrates its strong reputation as a leading polytechnic in the region. Securing the Gold Award accreditation on two separate occasions is a testament to PSA's unwavering commitment, strategic leadership, and the collective dedication of its faculty, staff, and students in upholding quality assurance at the highest level. Through this recognition, PSA has proven its ability to fulfil APACC's seven stringent accreditation criteria: Governance and Management, Teaching and Learning, Faculty and Staff, Research and Development, Extension, Consultancy and Linkages, Resources, and Support to Students. This dual achievement underlines PSA's continuous pursuit of excellence and innovation in technical and vocational education, while strengthening its position as an institution that not only meets but also exceeds international benchmarks. The accreditation evidence is provided in **Appendix G1-1f**.

The QMS Team was established in 1997. PSA was the first polytechnic to convert from MS ISO 9002:1994 to MS ISO 9001:2000 in June 2002 and has continuously adopted the MS ISO Quality Management System since 2005. For the past nine years, PSA has successfully maintained its ISO certification with the scope of providing education services at Certificate, Diploma and Degree levels in engineering and commerce. In line with continuous improvement, PSA achieved certification for ISO 21001:2018 Educational Organizations Management Systems (EOMS) in 2022,

as shown in **Appendix G1-1g** and the next renewal is scheduled for 2025. Meanwhile, PSA has also been certified under ISO 45001:2018 Occupational Health and Safety Management since October 2020, ensuring a safe and conducive working environment, as referred to in **Appendix G1-1h**

To strengthen its management, PSA has charted a clear institutional direction through the PSA Strategic Plan 2021–2025, which positions PSA as an Intelligent Campus. As shown in **Appendix G1-1i**, this vision is driven by the synergy of integrated management systems, digital networks, and emerging technologies within a dynamic human ecosystem. It emphasises the principles of integration, networking, technology, ecosystem development, continuous learning, and linkages, alongside the values of noble character, enterprise, sustainability, and innovation. In addition, PSA's management system is firmly anchored on seven Excellence Criteria that guide the institution's governance and operations. Building on past recognition through APACC accreditation and strengthened by the Intelligent Campus initiatives, PSA has established a well-structured and systematic management framework. This approach ensures that every effort is aligned not only with PSA's own strategic thrusts but also with the broader aspirations of the JPPKK Strategic Plan 2018–2025. More than just a roadmap, these initiatives demonstrate PSA's concrete achievements and continuous commitment in realising impactful outcomes, positioning PSA as a respected and forward-looking TVET 6.0 institution.

PSA has received full recognition from the Jabatan Pembangunan Kemahiran (JPK) as an accredited centre (Pusat Bertauliah) to run the SKM Draftsman Full Certification under the Diploma in Mechanical Engineering (DKM) programme, as shown in **Appendix G1-1j**. Since 2022, a total of 176 Mechanical Engineering students have participated in this programme. The SKM Draftsman certification is currently ongoing, with the final cohorts (Cohort 5 and Cohort 6) in progress. Upon completion, students will graduate with both the Diploma in Mechanical Engineering and SKM Draftsman Level 3 certification, further enhancing their professional competency. Examples of student certification can be referred to in **Appendix G1-1k**. In addition, PSA has also received recognition from JPK to conduct SKM Micro-Credentials. As shown in **Appendix G1-1l**, these include the AutoCAD Micro-Credential, where PSA successfully delivered the Certified Construction Site Supervisor (M&E) Micro-Credential programme between November and December 2021. A total of 127 alumni and post-graduate students participated, with 31% successfully improving their career competency—demonstrating the strong positive impact and value of this initiative for Mechanical Engineering Department graduates.

Looking ahead, PSA through the Department of Mechanical Engineering (JKM) has planned new SKM programmes starting in 2025. These include Micro-Credential in CADD (2 weeks), Micro-Credential in Digital Packaging (2 weeks), and Micro-Credential in Welding Industry (2 weeks). The introduction of these short-term, industry-focused programmes complements the existing SKM pathway and further strengthens PSA's role in producing highly skilled graduates who are relevant to industry demands and aligned with national TVET aspirations.

The establishment of the Institute of Medical Engineering Technology (IMET) at Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) signifies a landmark achievement in advancing PSA's role as a premier institution in TVET – Transforming the Future. IMET has been designed as a holistic ecosystem that integrates curriculum development, industry collaboration, applied research, innovation, and specialized training to meet the demands of Industry 4.0 and beyond. Within this ecosystem, PSA has successfully developed three dedicated centers of excellence. The Center of

Medical Electronic Technology (CMET) strengthens laboratory capabilities by providing calibration, repair, and maintenance services for biomedical equipment, while also functioning as a Biomedical Certification Centre. The Technology Robotic and IoT Center (TRIC) serves as an accredited Personnel Certification Body in IoT and delivers specialized training in rehabilitation technology, addressing critical workforce needs in emerging technologies. Most prominently, the Additive Manufacturing Center (ADMC), established under the Department of Mechanical Engineering, acts as a pioneering hub for advanced additive manufacturing. ADMC focuses on innovation in design, prototyping, and production methods aligned with Industry 4.0, positioning PSA at the forefront of next-generation engineering solutions.

Looking forward, the strategic direction of IMET further amplifies PSA's leadership in medical engineering technology. The roadmap emphasizes four pillars: developing an Academy of Medical Engineering Technology, commercializing institutional expertise and resources, becoming a collaboration hub for industries and international partners, and evolving into a statutory, autonomous, flexible, and adaptive institution. These strategic moves reaffirm PSA's commitment to excellence, innovation, and global relevance, while solidifying its standing as a driving force in shaping the future of medical engineering within the TVET landscape. The strategic direction of IMET is detailed in **Appendix G1-1m**.

G. Department of Mechanical Engineering (JKM)

The Department of Mechanical Engineering (JKM) is led by a Head of Department (HOD), supported by three Heads of Programmes (HOP), 39 academic staff, and four support staff. The department currently offers three academic programmes: Diploma in Mechanical Engineering (DKM), the Diploma in Mechanical Engineering (Industrial Packaging) (DMP)**,** and the Exclusive Certificate in Mechanical Maintenance (KMK), an exclusive programme specifically designed for deaf students (OKU *Pendengaran*) to promote accessibility and inclusivity in technical education. **Table G1-1c** and **Figure G1-1e** provide the general information and organizational chart of JKM.

Name of Head of Department	Muhammad Faiz Bin Abdullah
Phone Number to be Contacted	03-51634000 ext: 1235
No. of Programmes Offered at the Department	3
Name of Programmes	Diploma in Mechanical Engineering
	Diploma in Mechanical Engineering (Industrial Packaging)
	Exclusive Certificate in Mechanical Maintenance
Number of MED Staff	47

Table G1-1c: General Information of JKM

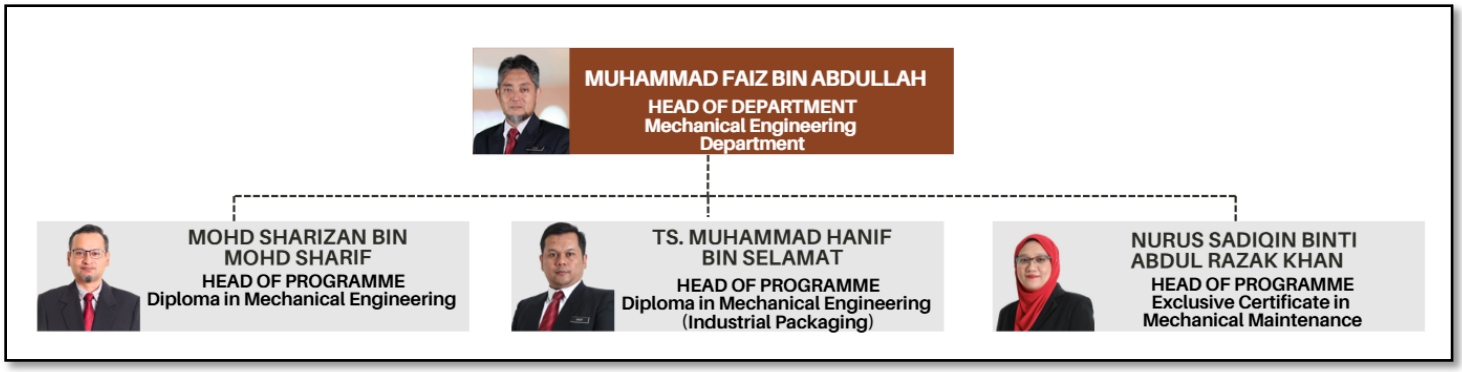


Figure G1-1e: The Top Management Organizational Chart of JKM

H. Diploma in Mechanical Engineering (Industrial Packaging) (DMP)

The Diploma in Mechanical Engineering (Industrial Packaging) (DMP) has been offered by the Department of Mechanical Engineering (JKM) since 1999 and remains one of its core academic programmes. The programme is led by a dedicated Head of Programme, supported by 11 committed and qualified academic staff who are devoted to delivering quality education and training. **Table G1-1d** and **Figure G1-1f** present the programme's general information and organizational chart. The teaching and learning activities are conducted in two academic sessions annually, in line with the academic calendar issued by JPPKK, with the latest cycle for 2025/2026 shown in **Figure G1-1g**.

The programme is designed to equip students with a comprehensive and practical technical foundation**,** enabling them to apply, analyze, and optimize industrial packaging processe**s** effectively in real-world settings. Graduates are expected to have the ability to adapt to emerging technologies, implement best practices, and respond to challenges in the Mechanical Engineering and Industrial Packaging fields, including materials handling, manufacturing, printing and labelling, food safety, sustainability, and machinery operation. The curriculum emphasizes hands-on training combined with theoretical knowledge**,** covering areas such as equipment operation, testing and quality control, process optimization, and safety compliance. In addition, students develop problem-solving, decision-making, and teamwork skills, preparing them to perform competently in industrial environments. This programme aims to produce skilled professional technicians who are ready to meet the operational demands of the packaging industry while contributing effectively to technological advancement and industry growth.

Name of Head of Programme	Ts. Muhammad Hanif bin Selamat
Diploma to be awarded and Abbreviation	Diploma in Mechanical Engineering (Industrial Packaging (DMP)
IHL awarding the diploma	Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA)
Mode of Study	Full Time
Duration of Programme (in years)	3 Years
Medium of Instruction	English Language and Bahasa Malaysia
Language Available for Reference Materials	English Language and Bahasa Malaysia
No. of Credits	94

Table G1-1d General information of the DMP Programme

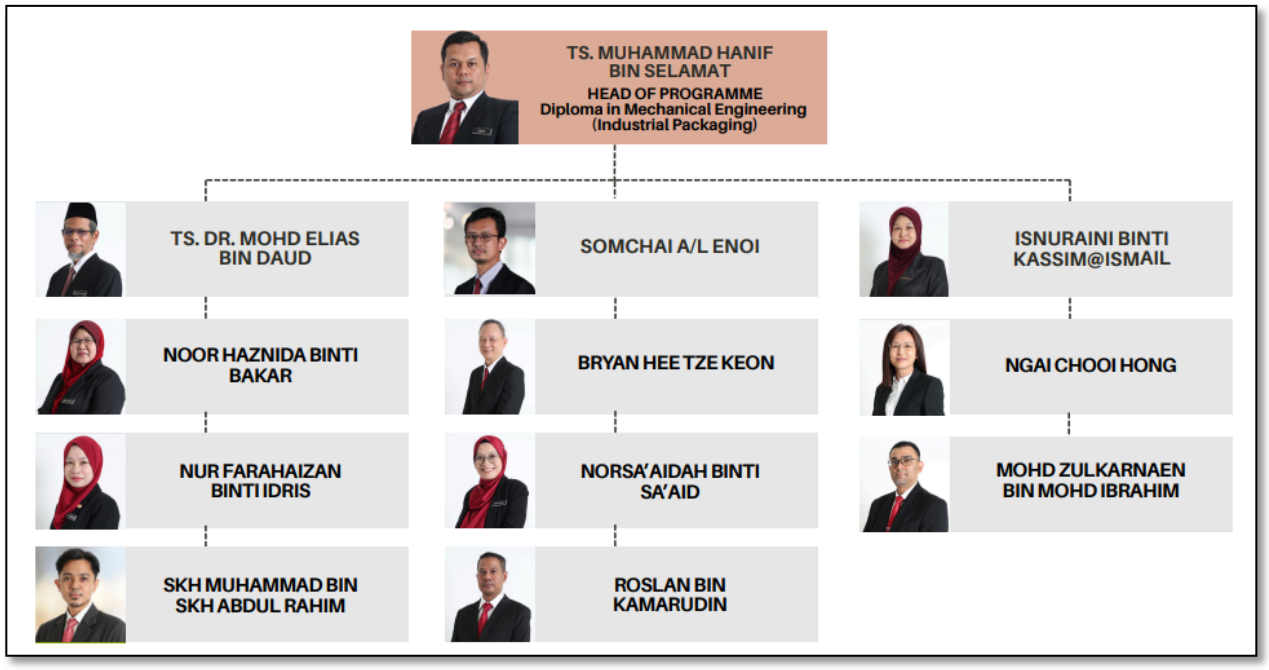
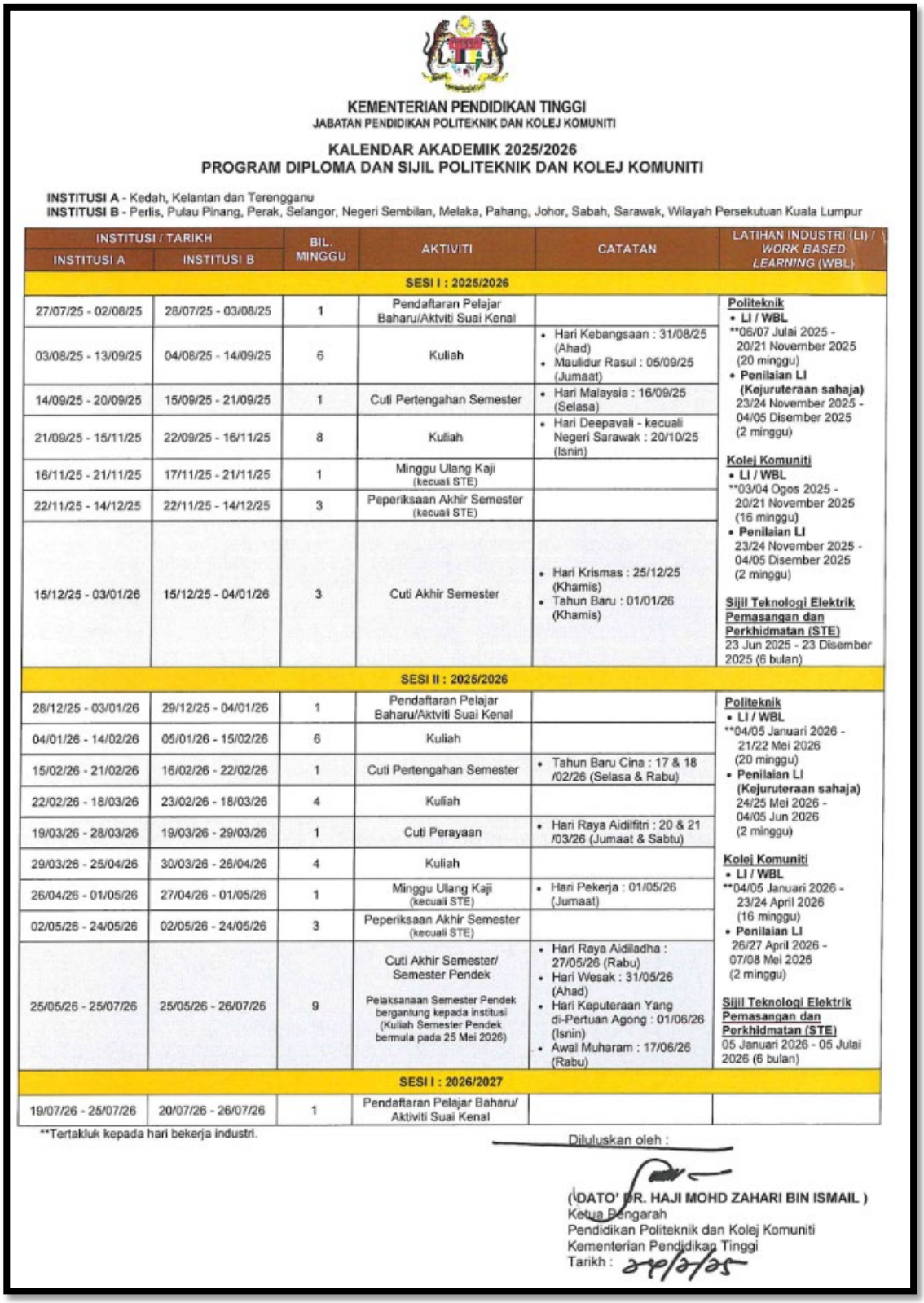


Figure G1-1F: Organizational Chart of the DMP Programme



KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

KALENDAR AKADEMIK 2025/2026
PROGRAM DIPLOMA DAN SIJIL POLITEKNIK DAN KOLEJ KOMUNITI

INSTITUSI A - Kedah, Kelantan dan Terengganu
INSTITUSI B - Perlis, Pulau Pinang, Perak, Selangor, Negeri Sembilan, Melaka, Pahang, Johor, Sabah, Sarawak, Wilayah Persekutuan Kuala Lumpur

INSTITUSI / TARIKH		BIL. MINGGU	AKTIVITI	CATATAN	LATIHAN INDUSTRI (LI) / *WORK BASED LEARNING* (WBL)
INSTITUSI A	INSTITUSI B				
SESI I : 2025/2026					
27/07/25 - 02/08/25	28/07/25 - 03/08/25	1	Pendaftaran Pelajar Baharu/Aktviti Suai Kenal		**Politeknik** • **LI / WBL** **06/07 Julai 2025 - 20/21 November 2025 (20 minggu) • **Penilaian LI (Kejuruteraan sahaja)** 23/24 November 2025 - 04/05 Disember 2025 (2 minggu) **Kolej Komuniti** • **LI / WBL** **03/04 Ogos 2025 - 20/21 November 2025 (16 minggu) • **Penilaian LI** 23/24 November 2025 - 04/05 Disember 2025 (2 minggu) **Sijil Teknologi Elektrik Pemasangan dan Perkhidmatan (STE)** 23 Jun 2025 - 23 Disember 2025 (6 bulan)
03/08/25 - 13/09/25	04/08/25 - 14/09/25	6	Kuliah	• Hari Kebangsaan : 31/08/25 (Ahad) • Maulidur Rasul : 05/09/25 (Jumaat)	
14/09/25 - 20/09/25	15/09/25 - 21/09/25	1	Cuti Pertengahan Semester	• Hari Malaysia : 16/09/25 (Selasa)	
21/09/25 - 15/11/25	22/09/25 - 16/11/25	8	Kuliah	• Hari Deepavali - kecuali Negeri Sarawak : 20/10/25 (Isnin)	
16/11/25 - 21/11/25	17/11/25 - 21/11/25	1	Minggu Ulang Kaji (kecuali STE)		
22/11/25 - 14/12/25	22/11/25 - 14/12/25	3	Peperiksaan Akhir Semester (kecuali STE)		
15/12/25 - 03/01/26	15/12/25 - 04/01/26	3	Cuti Akhir Semester	• Hari Krismas : 25/12/25 (Khamis) • Tahun Baru : 01/01/26 (Khamis)	
SESI II : 2025/2026					
28/12/25 - 03/01/26	29/12/25 - 04/01/26	1	Pendaftaran Pelajar Baharu/Aktviti Suai Kenal		**Politeknik** • **LI / WBL** **04/05 Januari 2026 - 21/22 Mei 2026 (20 minggu) • **Penilaian LI (Kejuruteraan sahaja)** 24/25 Mei 2026 - 04/05 Jun 2026 (2 minggu) **Kolej Komuniti** • **LI / WBL** **04/05 Januari 2026 - 23/24 April 2026 (16 minggu) • **Penilaian LI** 26/27 April 2026 - 07/08 Mei 2026 (2 minggu) **Sijil Teknologi Elektrik Pemasangan dan Perkhidmatan (STE)** 05 Januari 2026 - 05 Julai 2026 (6 bulan)
04/01/26 - 14/02/26	05/01/26 - 15/02/26	6	Kuliah		
15/02/26 - 21/02/26	16/02/26 - 22/02/26	1	Cuti Pertengahan Semester	• Tahun Baru Cina : 17 & 18 /02/26 (Selasa & Rabu)	
22/02/26 - 18/03/26	23/02/26 - 18/03/26	4	Kuliah		
19/03/26 - 28/03/26	19/03/26 - 29/03/26	1	Cuti Perayaan	• Hari Raya Aidilfitri : 20 & 21 /03/26 (Jumaat & Sabtu)	
29/03/26 - 25/04/26	30/03/26 - 26/04/26	4	Kuliah		
26/04/26 - 01/05/26	27/04/26 - 01/05/26	1	Minggu Ulang Kaji (kecuali STE)	• Hari Pekerja : 01/05/26 (Jumaat)	
02/05/26 - 24/05/26	02/05/26 - 24/05/26	3	Peperiksaan Akhir Semester (kecuali STE)		
25/05/26 - 25/07/26	25/05/26 - 26/07/26	9	Cuti Akhir Semester/ Semester Pendek Pelaksanaan Semester Pendek bergantung kepada institusi (Kuliah Semester Pendek bermula pada 25 Mei 2026)	• Hari Raya Aidiladha : 27/05/26 (Rabu) • Hari Wesak : 31/05/26 (Ahad) • Hari Keputeraan Yang di-Pertuan Agong : 01/06/26 (Isnin) • Awal Muharam : 17/06/26 (Rabu)	
SESI I : 2026/2027					
19/07/26 - 25/07/26	20/07/26 - 26/07/26	1	Pendaftaran Pelajar Baharu/ Aktiviti Suai Kenal		

**Tertakluk kepada hari bekerja industri.

Diluluskan oleh :

(DATO' DR. HAJI MOHD ZAHARI BIN ISMAIL)
Ketua Pengarah
Pendidikan Politeknik dan Kolej Komuniti
Kementerian Pendidikan Tinggi
Tarikh : 29/8/25

Figure G1-1g: Academic Calendar for 2025/2026

G1-2 Provide accreditation history (year of accreditation, conditions imposed, and actions taken).

I. Programme History of Accreditation

DMP programme has been offered at PSA since the year 1999. It was accredited by a statutory body known as the National Accreditation Board of Malaysia (LAN). When LAN was dissolved in 2007, its functions were taken over by the Malaysian Qualifications Agency (MQA). Since then, PSA has put all its efforts towards getting accreditation from the MQA for all programmes offered at the institution. The complete accreditation status by the MQA was achieved for the DMP programme in 2013, shown in **Appendix G1-2a**. In 2018, DMP Programme was fully certified by the Board of Engineer Malaysia (BEM). The history of the accreditation process for the DMP Programme is shown in **Table G1-2a**. The programme has successfully renewed its accreditation in 2025, demonstrating continuous compliance with MQA and BEM requirements, and ensuring that the quality of curriculum, teaching, and assessment remains aligned with national standards and industry expectations. **Appendix G1-2b** also highlights the feedback received from ETAC during the 2024 accreditation cycle and the corresponding actions taken by PSA, reflecting the department's strong commitment to continual improvement and responsiveness to external evaluation.

No.	Year of Accredited	Accreditation Agency
1	2002 - 2009	National Accreditation Board of Malaysia (LAN)
2	2010 - 2012	Deemed accreditation status by the Malaysian Qualifications Agency (MQA)
3	2013	Full accreditation status by the Malaysian Qualifications Agency (MQA)
4	2018	Deemed accreditation status by the Board of Engineer Malaysia (BEM)
5	2019	Full accreditation ETAC
6	2025	New cycle accreditation ETAC

Table G1-2a: The History of Accreditation Process for DMP Programme

G1-3 Describe changes made to the programme stating the year the changes were introduced.

J. Curriculum Structure

As part of the ETAC accreditation process, several recommendations on the curriculum structure were issued to further enhance the implementation of the programmes at PSA. In response, the Department of Polytechnic Education and Community College (JPPKK), through the Curriculum Division, issued an official *Surat Pekeliling Kurikulum (SPK)* directing the implementation of the new curriculum structure for Session 1, 2025/2026 across all polytechnics in Malaysia. Additionally, there has been a change in the programme name from Diploma in Mechanical Engineering (Packaging) to Diploma in Mechanical Engineering (Industrial Packaging), effective from Session 1 2025/2026, as formally announced in the SPK (refer to **Appendix G1-3a**). This updated curriculum further strengthens the existing programme design and ensures alignment with current technological advancements. **Table G1-3a** illustrates the changes made from the June 2019 curriculum structure to the new structure for Session 1, 2025/2026, while **Appendix G1-3b** contains the official SPK serving as the authority for its implementation, and **Appendix G1-3c** provides detailed updates to course information.

No	Criteria Changes	Curriculum June 2019	Curriculum Sesi 1: 2025/2026
1.	Programme Learning Outcomes (PLOs)	12 PLOs ETAC	11 PLOs ETAC
2.	Duration	14 weeks / semester	14 weeks / semester
3.	Course Code	DJPXXXXX	DJPXXXXX
4.	Industrial Training	Implementation in Semester 6	Implementation in Semester 6
5.	The total number of credits for each classification of courses	Compulsory: 14 Common Core: 15 Discipline Core: 33 Specilization: 20 Elective: 2	Compulsory: 13 Common Core: 15 Discipline Core: 37 Specialization:16 Elective: 2

No.	Programme Structure		Changes Mode
	Old Version (2019)	Latest Version (2025)	
1	DJP30022 Packaging Principles	DJP30092 Packaging Principles	Name and code of the course
	Explain the principles of packaging specified on packaging functions and classifications related to engineering fundamentals. (C2, PLO1) Apply the fundamentals of packaging for product and	CLO1: explain the fundamentals of packaging specified on packaging functions and classifications. (C2, PLO 1) CLO2: apply the cushioning materials and dynamic	Syllabus of the course

	package characteristics. as well as the hazards during distribution. (C3, PLO1) Demonstrate ability to work as a team to complete on assigned tasks. (A3, PLO9)	behavio of packages in the distribution environment. (C3, PLO 4) CLO3: demonstrate ability to work as a team to completion assigned tasks. (A3, PLO 8)	
	i. Packaging Functions ii. Packaging Classifications iii. Product and Package Characteristics iv. Packaging Storage and Distribution	i. Introduction to Packaging ii. Packaging Functions iii. Packaging Classification iv. Packaging Cushioning v. Packaging Dynamics and Distribution	Syllabus of the course
2	● DJP30022 Packaging Principles ● 3 CLOs are evaluated by cognitive & affective level (C3, C3, A3) ● Assessment : ● 1. Quiz(10%) ● 2. Test(20%) ● 3. Case Study(10%) ● 4. End Of Chapter(5%) ● 5. Presentation(5%) ● TOTAL CA = 50%	● DJP30092 Packaging Principles ● 3 CLOs are evaluated by cognitive & affective level (C2, C3, A3) ● Assessment : ● 1. Quiz(10%) ● 2. Test(10%) ● 3. Case Study(20%) ● 4. Presentation(10%) ● TOTAL CA = 50%	● Course code ● Types of Learning Domain & difficulties of cognitive level ● Course content ● Assessment
3	●DJP40043 ●Packaging Material & Manufacturing ●3 CLOs are evaluated by cognitive & affective level (C3, C3, A3) ●Assessment: ●Test (1) - 40% • Quiz (2) - 20% • End Of Chapter (1) - 10% • Case Study (1) -20% • Presentation (1) - 10% ●TOTAL CA = 50%	● DJP40123 ● Packaging Manufacturing Technology ● 3 CLOs are evaluated by cognitive & affective level (C3, C4, P4) • Assessment: • Test (1) - 20% • Quiz (1) - 5% • Practical work (1)- 20% • Assignment (1) - 5% • TOTAL CA = 50%	● Course code ● Types of Learning Domain & difficulties of cognitive level ● Assessment

Table G1-3a: Comparative Illustration of the Curriculum Structure: June 2019 versus Session 1, 2025/2026.

C1-1 State the vision and mission of the IHL/faculty

A. Vision and Mission

The Department of Polytechnic and Community College Education (JPPKK) and Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) share the same Vision and Mission.

Vision:

"To be the Leading-Edge TVET institution."

Mission:

This mission can be divided into four important components which are:
1. To provide wide access to quality and recognized TVET programmes.
2. To empower communities through lifelong learning.
3. To develop holistic, entrepreneurial and balanced graduates.
4. To capitalise on smart partnerships with stakeholders

Motto:

"The Preferred Polytechnic"

C1-2 List the PEO and state where they are publised or publicised

B. Programme Educational Objectives (PEO)

The programme is preparing graduates to be capable personnel at the workplace and in society, during the first few years following graduation. **Table C1-2a** shows PEO's description for curriculum Effective June 2019. The graduates are expected to achieve the following PEOs:

Table C2-1a: Programme Educational Objectives

PEO	VARIABLE MEASURE	DESCRIPTION
PEO1: Proficient with industry-relevant knowledge and skills in mechanical engineering field	Technician in Mechanical Engineering	Students are trained to the knowledge and skills related to the mechanical engineering field
PEO2: Engaging on lifelong and continuous learning to enhance knowledge and skills	Role of graduate	Describes graduates still with awareness in commercial skill towards the real environment.

PEO3: Acquire with entrepreneurial skills and mind set in the real working environment	Enterprising Activity	Students are trained in enterprising activity and build their self-confidence to communicate effectively, the activities also expose them to the real working environment.
PEO4: Establish links with society and players in the industry	Career Advancement	Students are exposed to professional ethics and engaged in industries and society during learning activities and CSR.

The PEOs are stated clearly in:

1. Student Study Guide which is distributed during the student orientation week **(Appendix C1-2a)**
2. Posters are displayed in all teaching and learning (T&L) rooms in the Mechanical Engineering Department (classrooms, workshops, laboratories, lecture hall, etc.) **(Appendix C1-2b)**.
3. Course Outline **(Appendix C1-2c)**.

PEOs are continuously disseminated to the students during the orientation week with the Head of Department or Heads of Programme, T&L sessions and meetings with academic advisors at the first week of every semester.

C1-3 Criterion 1: (iii) Describe how the Programme Educational Objectives are consistent with the vision and mission of the IHL/faculty.

C. PEO consistency with the vision and mission of the IHL/faculty and stakeholders requirements.

One of the first elements that are required to be developed in the implementation of Outcome-Based Education (OBE) is the Programme Educational Objectives (PEOs). PEOs are a set of goals or targets that describe the expected achievement of the graduates in their careers a few years after graduation. These goals must be consistent with the vision and mission of the academic institution, and take into consideration the needs of relevant stakeholders to the programme.

The PEOs of the DMP programme have been developed to be consistent with the vision and mission of JPPKK, as well as stakeholders' requirements. The PEOs are statements that describe the expected achievements of graduates in their career and professional life three to five years after graduation.

The relationship between the IHL mission and PEOs is shown in **Table C1-3a**.

Table C1-3a: Relation between PSA Missions and PEOs

	Programme Educational Objectives (PEO)	PSA Mission			
		Wide access to quality	**Life long learning**	**Balanced gradautes**	**Smart partnership**
1.	**PEO1:**Proficient with industry-relevant knowledge and skills in mechanical engineering field	**√**			**√**
2.	**PEO2:** Engaging on lifelong and continuous learning to enhance knowledge and skills		**√**	**√**	
3.	**PEO3:**Acquire with entrepreneurial skills and mind set in the real working environment			**√**	**√**
4.	**PEO4:** Establish links with society and players in the industry	**√**		**√**	**√**

The PEOs are determined by incorporating the vision and mission of the Department of Polytechnic and Community College Education (DPCCE) as well as stakeholder's expectations. The stakeholders of the programme are as follows:

1. **Ministry of Higher Education (MOHE)** – The governance that determines the national education policies and development plans.
2. **Students** – The students expect to become technically competent, marketable technicians on completion of the programme.
3. **Lecturers** – A group of personnel who are involved directly in the process of teaching and learning for the electrical engineering programme.
4. **Alumni** - A group of alumni expects a continual high-quality educational programme at IHL as their reputation is reflected in the quality of their education. These individuals have been highly successful and bring insight from a variety of industries and academia.
5. **Industry / Employers** - This group expects graduates who are technically competent and productive, have good skills in communication, teamwork and leadership, and have high ethical values towards social and environmental awareness.

All the stakeholders had been involved through varied degrees of participation in the development and review process of the PEOs. Stakeholder participation is often through the attendance of meetings, workshops, questionnaire surveys or other forums to ensure that the PEOs are consistent with the JPPKK vision and mission.

JPPKK. The same committee defined the program outcomes, course outlines and syllabi. The curriculum is approved by the Polytechnic Curriculum Board (PCB), which is appointed by the MOE based on the Education Act 1996 (Act 550).

C1-4 Criterion 1: (iv) Describe the processes used to establish the Programme Educational Objectives and the extent to which the programme's various stakeholders are involved in these processes.

D. Processes Used to Establish the PEOs

The polytechnics in Malaysia are centrally managed by the Department of Polytechnic Education (JPPKK) under the Ministry of Higher Education Malaysia. This includes the development of the curriculum of all the programmes offered by the polytechnics. The curriculum development process is done under the supervision of the Curriculum Development Division (CDD) of JPPKK. **Figure C1-4a** shows the curriculum development process employed by the CDD.

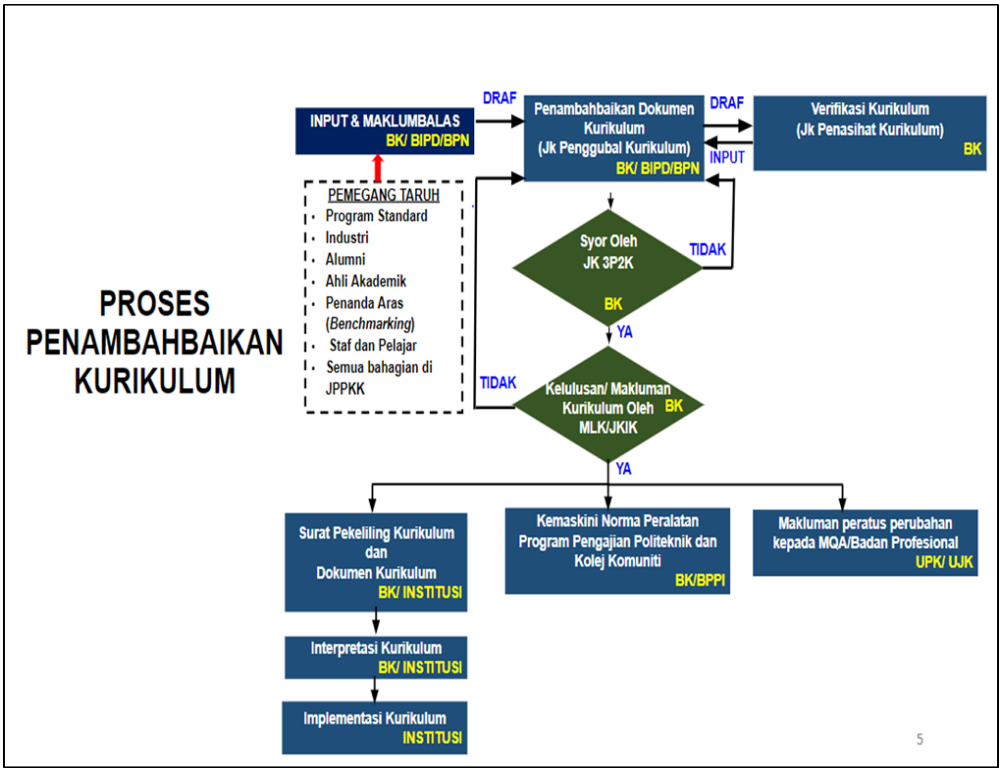


Figure C1-4a: Flowcharts of Curriculum Development Process in Polytechnics

The PEOs and Programme Outcomes (PLOs) are initially formulated by the CDD concerning guidelines produced by the Malaysian Qualification Framework (MQF) and Engineering Technology Accreditation Council (ETAC), while the academic curriculum is developed by the Curriculum Development Committee (CDC), a committee set up by CDD for each programme. The committee usually comprises lecturers from the polytechnics, experts from other institutions of higher learning (IHL) and also representatives from the relevant industries.

The PEOs, PLOs and the academic curriculum of a programme are then reviewed and refined by the Curriculum Advisory Committee (CAC) for verification. The Polytechnic and Community College Study Program Subcommittee (JK 3P2K) will ensure the programme complies with the requirement of the current standard and policy before approval by the Polytechnic Curriculum Board (PCB) in the Curriculum Board Meeting (MLK). The members of CAC are appointed by the CDD, which comprises another group of experts from IHLs and representatives from the relevant industries. The subcommittee members are appointed among the Polytechnic senior officers and lecturers. The PCB is the highest body set up by the ministry to approve all the curriculums before it is implemented at the polytechnic. Top management of DPCCE, representatives of professional bodies and academicians are members of the PCB who are appointed from private and public IHLs by the Minister of Higher Education. A list of the members of the CDC, CAC, JK 3P2K and PCB are available in **Appendix C1-4a, Appendix C1-4b, Appendix C1-4c** and **Appendix C1-4d** respectively. After receiving approval from the PCB, Curriculum Division, JPPKK will issue a Curriculum Circular Letter to institutions to inform them of the latest use of curriculum documents.

C1-5 Criterion 1: (v) Describe the process for the periodic review and revision of these Programme Educational Objectives.

E. Processes for the Periodic Review and Revision of PEOs

CDC analyses the PEO input from MOHE, Industry, and other stakeholders, feedback from the Programme Advisory Committee in polytechnic and the PEO attainment to revise the PEO. The feedback is used to identify the gap and improve the PEO to align with the stakeholder's needs. The revised PEO statement has to be reviewed by the industry and other stakeholders to ensure its relevance.

Guided by the JPPKK vision and mission statements, input from the MOHE, programme advisory committee, other stakeholders and PEO attainment, the program educational objectives are reviewed and updated regularly by the department of the curriculum through the process established as shown in **Figure C1-5a.** CDC will analyse the PEO inputs and attainment to identify the gap and improve the PEO to align with the stakeholder needs. The modifications also have to be aligned with the vision and mission of JPPKK. The revised PEO will be submitted to the Program Advisory Committee at the polytechnic level and other stakeholders for review and feedback. The established PEO has to be approved and endorsed by the PCB before being formally used by polytechnics. The dissemination of the PEO is done as part of the curriculum documents through the CIDOS portal.

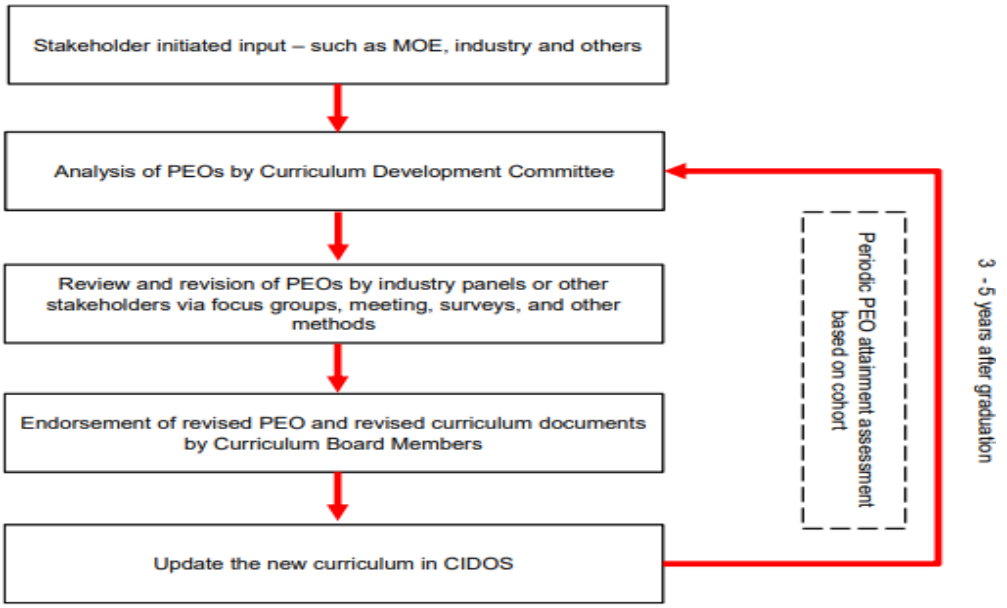


Figure C1-5a : Flowcharts Periodic Review And Revision Process For PEO

F. Process for the assessment of PEOs attainment

The PEO attainment assessment will be centralised by CDD by referring to Garis Panduan Pelaksanaan Kajian PEO shown in **Appendix C1-5a**. A committee is set up to prepare the questionnaires and analyse the data from the survey. The previous questionnaires are revised and improved to ensure the purpose of the PEO assessment is achieved. The stakeholders that would be involved in the survey are the alumni.For the alumni data collection, the polytechnic will send the questionnaire related to the measurement of PEOs via email or mobile apps directly to the student by using through former academic advisor. The items of the questionnaire for the alumni are shown in **Appendix C1- 5b**.

This is in line with the target of getting feedback from the polytechnic alumni in their third to fifth year after graduation. The evaluation result is expected to be used as input for the curriculum review process by the CDD which is planned for 2024. The revised PEOs will then go through the same verification steps mentioned in **Section C1-4** during the curriculum review process of the programme. The new curriculum will be implemented in 2024.

A survey was centralised and conducted by CDD in 2022 to assess the student's achievement of PEOs for Curriculum Effective June 2019. The respondents of this survey are from graduates

in December 2019 untill sesi December 2022. CDD has developed one set of questionnaires to get feedback from the alumni. The questionnaires can be reached at the following links: https://forms.gle/xgTA6oB8rSb6hMLb8. Based on the data collected and analysed, it was found that graduates have successfully achieved the target of PEOs in **Appendix C1-5c**. The

overall performance of PEOs can be summarised in **Table C1-5b.** The specific data for PSA only is shown in **Appendix C1-5d**. The official letter of the PEO attainments can be referred to in **Appendix C1-5e.**

Table C1-5b: Summary of PEOs Performance Curriculum June 2019

PEO	STATEMENT	KPI TARGET	PERCENTAGE SCORE %	RESULT
PEO 1	Equipped with industry-relevant knowledge and skills in the Mechanical Engineering field.	40.0%	70.3%	Accomplished
PEO 2	Engaging in lifelong and continuous learning to enchance knowledge and skills	30.0%	62.5%	Accomplished
PEO 3	Instilled with entreneurisl skills and mindset in the real working environment	30.0%	68.7%	Accomplished
PEO 4	Established with strong linkage with society and players in the industry.	10.0%	72.9%	Accomplished

Before the assessment of the PEOs achievement, the pilot test shown in **Appendix C1-5f** has been conducted to get the PEO performance indicators and has been set in the PEO Meeting, Academic Meeting and Department of Mechanical Engineering programme Industry Advisory Committee meeting (IAC) in 2022 **(Appendix C1-5g)**. The achievement of the PEOs is measured through defined KPIs as in **Table C1-5c.** The result report can be summarised in **Appendix C1-5h**.

Table C1-5c: Defined KPIs of Version June 2019 PEOs

PEO	Curriculum June 2019	KPI
PEO1	Equipped with industry-relevant knowledge and skills in the Mechanical Engineering field.	40% of the graduates will make a profession in the engineering field
PEO2	Engaging in lifelong and continuous learning to enhance knowledge and skills.	30% of the graduates will be able to engage in lifelong and continuous learning
PEO3	Instilled with entrepreneurial skills and mindset in the real working environment.	30% of the graduates will become entrepreneurs
PEO4	Established with strong linkage with society and players in the industry.	10% of the graduates will be able to contribute to society and become players in the industry

G. Renaming of the Programme to Diploma in Mechanical Engineering (Industrial Packaging)

Based on the recommendations from the Industry Advisory Panel meeting held in 2024 **in Appendix C1-5F**, the programme previously known as the *Diploma in Mechanical Engineering (Packaging)* has been officially renamed as the *Diploma in Mechanical Engineering (Industrial Packaging)*. This change aligns with the introduction of the new curriculum for the Diploma in Mechanical Engineering (Industrial Packaging), which will be implemented starting from Semester 1 of the 2025/2026 academic session.

The new curriculum also incorporates a revised set of Programme Educational Objectives (PEO). The review and renewal of the PEOs were conducted as part of the curriculum development cycle to ensure that the programme outcomes remain relevant and are aligned with the rapid advancements in mechanical technology as well as the evolving needs of the industrial packaging sector.

In line with the adoption of the new PEOs, the updated Programme Outcomes (POs) are also applied in accordance with the Engineering Technology Accreditation Council (ETAC) 2024 guidelines. This ensures that the programme not only meets national and international academic standards but also equips graduates with the necessary knowledge, skills, and competencies required by the industry. The official letter for the programme renaming can be referred to in **Appendix C1-5G.**

C2-1 List down the Programme Outcomes and state where they are published.

A. Programme Learning Outcomes (PLOs) and Dissemination of Information

The PLOs listed in the MQA Programme Standard are adapted from the current Dublin Accord 12 PLOs in the ETAC Standard**. Table C2-1a** presents the PLO Curriculum (June 2019 version).
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Table C2-1a: The PLO Curriculum version June 2019

PLOs	PLO Curriculum version June 2019
PLO1:	Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization as specified in DK1 to DK4 respectively to wide practical procedures and practices.
PLO2:	Identify and analyze 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 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:	Recognize the need for, and have the ability to engage in independent updating in the context of specialized technical knowledge.

In the 2024 MQA and ETAC standards, 11 PLOs are applied in the curriculum starting from Session 1: 2025/2026, as shown in **Table C2-1b**

Table C2-1b: The PLO Curriculum version Sesi 1: 2025/2026

PLOs	PLO Curriculum Version Sesi 1: 2025/2026
PLO1:	Apply knowledge of applied mathematics, applied science, computer and engineering fundamentals and an engineering specialization as specified in DK1 to DK4 respectively to wide practical procedures and practices in area of mechanical engineering specialized in industrial packaging.
PLO2:	Identify and analyze well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechanical engineering field specialized in industrial packaging (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 as well as, cultural, societal, and environmental considerations in area of mechanical engineering specialized in industrial packaging (DK5).
PLO4:	Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8).
PLO5:	Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6).
PLO6:	Consider sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems (DK1, DK5 and DK7)
PLO7:	Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (DK9).
PLO8:	Function effectively as an individual, and as a member in diverse and inclusive teams in multi-disciplinary, face-to-face, remote and distributed settings (DK9).
PLO9:	Communicate effectively and inclusively 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.
PLO10:	Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.
PLO11:	Recognize the need for, and have the ability for i) independent and lifelong learning and ii) critical thinking in the face of specialized technical knowledge (DK8). *Represented by the 17 UN Sustainable Development Goals (UN-SDG).

These Programme Learning Outcomes are clearly stated in the **Curriculum Information Document Online System (CIDOS) platform, Course Outline,** as well as displayed in all classrooms and laboratories in the Mechanical Engineering Department. Students are also made aware of the PLOs from the beginning of their study during a session with the Programme Leader during the orientation week. They are also reminded from time to time throughout the duration of study such as during the Academic Advisor meeting sessions.

C2-2 Describe how the Programme Outcomes are mapped to theProgramme Educational Objectives.

B. Programme Learning Outcomes (PLOs) in relation to the Programme Education Objectives (PEOs)

The Programme Learning Outcomes can be mapped with Programme Educational objectives as shown in **Table C2-2a and Table C2-2b**. All the PLOs of the DMP programme can be mapped to the PEOs programme.

Table C2-2a: Mapping between PLOs and PEOs Curriculum version June 2019

PROGRAMME LEARNING OUTCOMES (PLO)		PROGRAMME EDUCATIONAL OBJECTIVES (PEO) Curriculum version June 2019			
		PEO 1	PEO 2	PEO 3	PEO 4
PLO1	Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization as specified in DK1 to DK4 respectively to wide practical procedures and practices.	/			
PLO2	Identify and analyze 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).				/

PROGRAMME LEARNING OUTCOMES (PLO)		PROGRAMME EDUCATIONAL OBJECTIVES (PEO) Curriculum version June 2019			
		PEO 1	PEO 2	PEO 3	PEO 4
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	Recognize the need for, and have the ability to engage in independent updating in the context of specialized technical knowledge.		/		

Programme Educational Objectives (PEOs) Curriculum version June 2019:

The Diploma in Mechanical Engineering (Packaging) programme should produce balanced and competent technical workers who are:

PEO1: equipped with industry-relevant knowledge and skills in mechanical engineering field
PEO2: engaging on lifelong and continuous learning to enhance knowledge and skills
PEO3: instilled with entrepreneurial skills and mindset in the real working environment
PEO4: established strong linkage with society and players in the industry

Table C2-2b: Mapping between PLOs and PEOs Curriculum version Sesi 1: 2025/2026

PROGRAMME LEARNING OUTCOMES (PLO)		PROGRAMME EDUCATIONAL OBJECTIVES (PEO) Curriculum version Sesi 1: 2025/2026			
		PEO 1	PEO 2	PEO 3	PEO 4
PLO1	Apply knowledge of applied mathematics, applied science, computer and engineering fundamentals and an engineering specialization as specified in DK1 to DK4 respectively to wide practical procedures and practices in area of mechanical engineering specialized in industrial packaging.	/			
PLO2	Identify and analyze well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechanical engineering field specialized in industrial packaging (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 as well as, cultural, societal, and environmental considerations in area of mechanical engineering specialized in industrial packaging (DK5).	/			
PLO4	Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8).	/			
PLO5	Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6).	/			
PLO6	Consider sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems (DK1, DK5 and DK7)				/
PLO7	Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (DK9).				/
PLO8	Function effectively as an individual, and as a member in diverse and inclusive teams in multi-disciplinary, face-to-face, remote and distributed settings (DK9).				/
PLO9	Communicate effectively and inclusively 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.				/

PROGRAMME LEARNING OUTCOMES (PLO)		**PROGRAMME EDUCATIONAL OBJECTIVES (PEO) Curriculum version Sesi 1: 2025/2026**			
		PEO 1	**PEO 2**	**PEO 3**	**PEO 4**
PLO10	Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.			/	
PLO11	Recognize the need for, and have the ability for i) independent and lifelong learning and ii) critical thinking in the face of specialized technical knowledge (DK8).		/		

PROGRAMME EDUCATIONAL OBJECTIVES (PEO) vesion Sesi 1: 2025/2026

Within a few years after completing Diploma in Mechanical Engineering (Industrial Packaging), graduates are able to:

PEO1: proficient with industry-relevant knowledge and skills in mechanical engineering industrial Packaging field.

PEO2: engaging on lifelong and continuous learning to enhance knowledge and skills

PEO3: acquire with entrepreneurial skills and mindset in the real working environment

PEO4: established links with society and players in the industry

C. Relationship between with ETAC Outcome Requirements and DMP Programme Learning Outcomes.

The program is using twelve (12) Programme Learning Outcomes (PLO) listed in the ETAC Standard 2020. Based on ETAC requirements, students are expected to attain the following outcomes:

1. **Knowledge**: 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;
2. **Problem analysis**: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity (DK1 to DK4);
3. **Design/development of solutions**: 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);
4. **Investigation**: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements;
5. **Modern Tool Usage**: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations (DK6);
6. **The Engineer and Society**: 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);
7. **Environment and Sustainability**: 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);
8. **Ethics**: Understand and commit to professional ethics and responsibilities and norms of technician practice(DK7);
9. **Individual and Team Work**: Function effectively as an individual, and as a member in diverse technical teams;
10. **Communications**: 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;
11. **Project Management and Finance**: 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 manage projects in multidisciplinary environments;
12. **Life Long Learning**: Recognise the need for, and have the ability to engage in independent updating in the context of specialized technical knowledge;

The PLOs can be mapped with the ETAC outcome requirements as shown in **Table C2-3**

Table C2-3a: Mapping between ETAC Outcome Requirements and PLOs of DMP Programme

ETAC Outcome Requirement	**DMP PLO Curriculum version June 2019**
Knowledge	PLO1
Problem analysis	PLO2
Design/development of solutions	PLO3
Investigation	PLO4
Modern Tool Usage	PLO5
The Engineer and Society	PLO6
Environment and Sustainability	PLO7
Ethics	PLO8
Individual and Team Work	PLO9
Communications	PLO10
Project Management and Finance	PLO11
Lifelong Learning	PLO12

C2-4 Describe the process used to establish and review the Programme Outcomes, and the extent
to which the programme's various stakeholders are involved in these processes.

D. Process in Establishing and Reviewing PLOs

The process of developing the PEO and PLOs is centrally managed by the JPPKK, including curriculum development for all programmes. The procedures for establishing and reviewing PLOs are together with establishing and reviewing PEOs. The details of procedures for establishing the PLOs are discussed in **C1-4.** The PLO reviewing process is done concurrently with reviewing PEOs, which involve the same committees. The detail is explained in **C1-5.**

C2-5 Describe the data gathered and explain the results of the assessment.

E. Demonstration of PLOs Achievement

The assessment method in the Diploma in Mechanical Engineering(industrial Packaging) Programme curriculum is constructively aligned with the Programme Learning Outcomes (PLO) and Course Learning Outcomes (CLO). On-going assessments were conducted throughout the course, embedded and linked directly to the current learning and teaching activities. Through observation and interaction in the classroom, the assessments help the academic staff to gain feedback on students' progress. Summative assessments were used to measure what students learned at the learning unit's end. Attainment of outcomes in the cognitive and psychomotor domains was directly assessed, whilst the affective domain was assessed in subjective assessment.

Generally, to ensure the CLOs, PLOs and learning domains (cognitive, psychomotor and affective) are being assessed, Final Examination Item Specification Table (FEIST) as shown in **Appendix C2- 5a** and Course Item Specification Table (CIST) as shown in **Appendix C2-5b** were created to coordinate lecturer in developing item of assessment. FIEST are endorsed by the DMP Program Coordinator.**Figure C2-5a** is a flowchart of developing the FEIST process. Anyhow, during the pandemic period starting from the December 2019 session until the 1:2021/2022 session, special appropriate coursework assessment (*Penilaian Kerja Kursus*) method and *Penilaian Alternatif* (PAlt) method were implemented to substitute the final examinations according to guidelines designed by JPPKK. Besides assessment development, it is also crucial for all types of assessments to undergo a systematic evaluation process. Hence, the module of i- EXAM in *Sistem Pengurusan Maklumat Politeknik* (SPMP) took place to record all the assessment data. As a result, CLOs and PLOs will be processed through this system. **Figure C2-5b** is a flowchart to generate CORR and PLORR using i-EXAM SPMP.

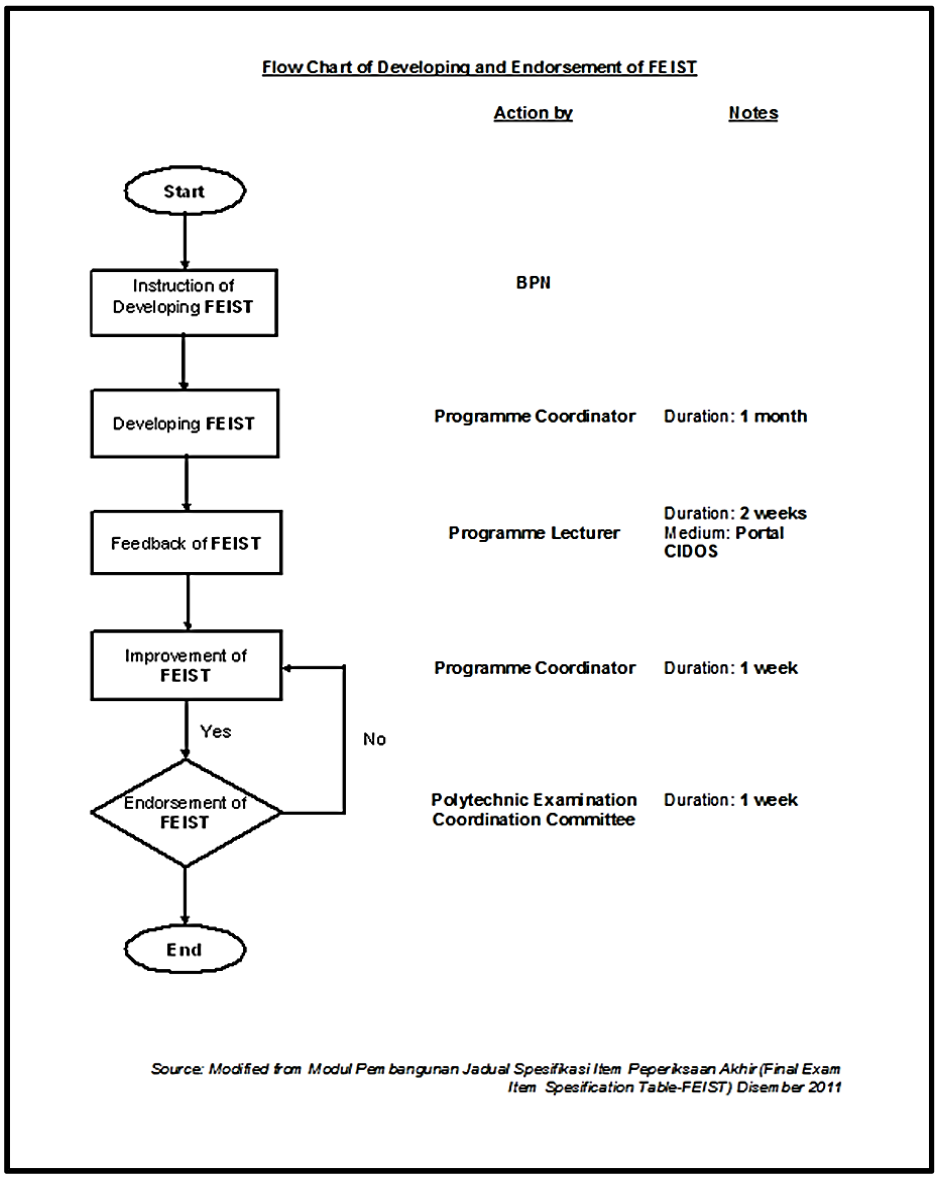


Figure C2-5a: Flowchart of Developing FIEST Process

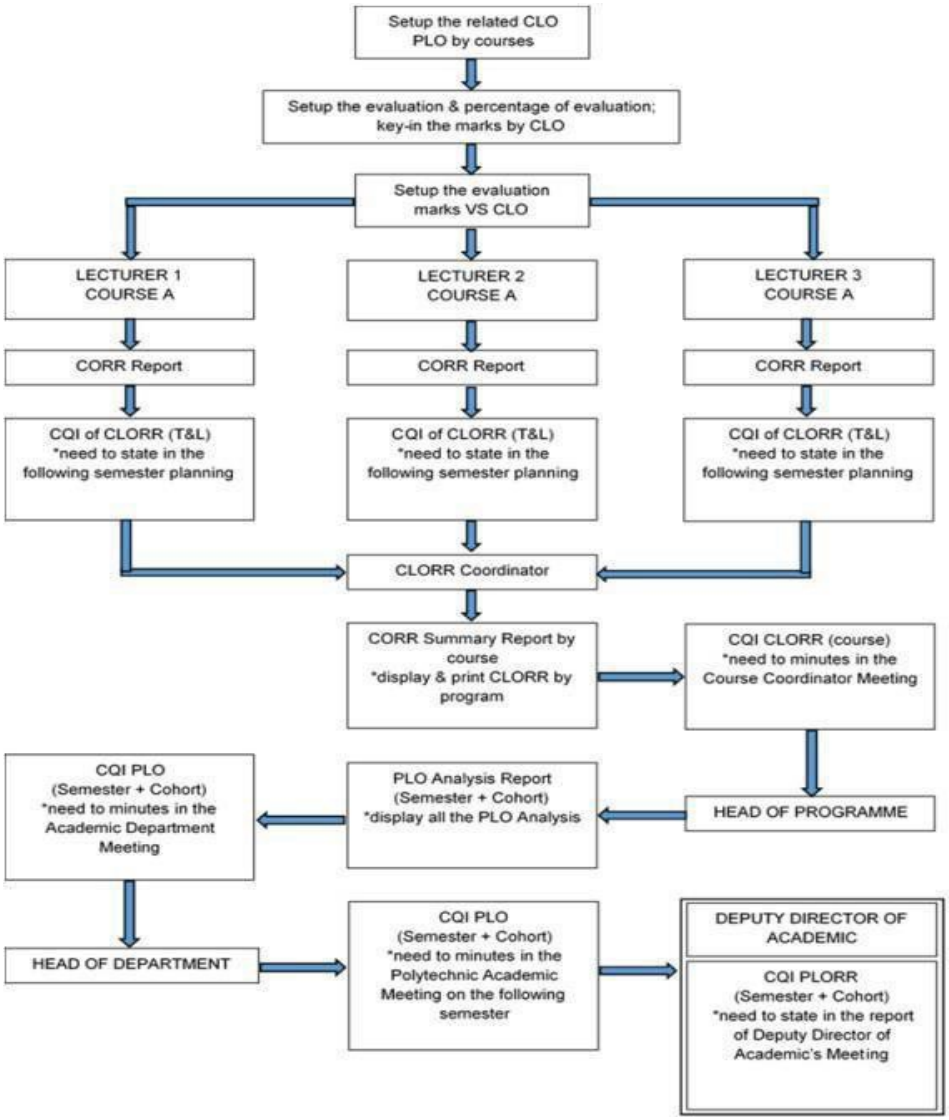


Figure C2-5b: Flowchart of Generate CORR and PLORR using i-EXAM in SPMP

After the CLOs and PLOs are obtained, the achievement of each CLO and PLO will be compared with the KPIs (course and pro level). If the result of each CLO and PLO are less than 50%, the lecturer will identify the cause and action for Continuous Quality Improvement (CQI) purposes. At this stage, all stakeholders including the Programme leader, Students, Academic Management will be aware of the improvements that need to be done. **Figure C2-5c** and **Figure C2-5d** below shows the PLO Achievement Summary of new syllabus for both cohorts of Diploma in Mechanical Engineering (Packaging) students beginning with December 2020 session and Sesi 2:2024/2025 session (curriculum document June 2019 version).

Programme Learning Outcome Group Attainment December 2020
Cohort Programme: Diploma in Mechanical Engineering (Packaging)

PROGRAMME LEARNING OUTCOME GROUP ATTAINMENT													
INTAKE : JUNE 2018 FINAL SEMESTER DEC 2020													
PROGRAMME:													
		KNOWLEDGE	PROBLEM AANALYSIS	DESIGN/ DEVELOPMENT OF SOLUTION	INVESTIGATION	MODERN TOOL USAGE	THE ENGINEER & SOCIETY	ENVIRONMENT & SUSTAINABILITY	ETHICS	INDIVIDUAL AND TEAMWORK	COMMUNICATION	PROJECT MANAGEMENT & FINANCE	LIFE LONG LEARNING
	SEMESTER	PLO01	PLO02	PLO03	PLO04	PLO05	PLO06	PLO07	PLO08	PLO09	PLO10	PLO11	PLO12
DMP	SEM 1- JUNE 2019	72				83	85		88	85	80		79
	SEM 2-DEC 2019	76	75			88			80	89	89		88
	SEM 3- JUNE 2020	65	47			81					72		71
	SEM 4- DEC 2020	78	74	64		84	83	79	82			87	82
	SEM 5- 1 2021/2022	77	69	84	75	85	81	87	72		79	81	83
	SEM 6- 2 2021/2022					84	86		90	93	81		
	AVERAGE PLO	**74**	**66**	**74**	**75**	**84**	**84**	**83**	**82**	**89**	**80**	**84**	**81**

Figure C2-5c: PLO Achievement for complete cohorts of December 2020 session DMP students by curriculum version June 2019

Programme Learning Outcome Group Attainment
Sesi 2: 2024/2025Cohort Programme: Diploma in Mechanical Engineering (Packaging)

PROGRAMME LEARNING OUTCOME GROUP ATTAINMENT													
INTAKE : 1 2022/2023 FINAL SEMESTER: Sesi 2: 2024/2025													
PROGRAMME:													
		KNOWLEDGE	PROBLEM AANALYSIS	DESIGN/ DEVELOPMENT OF SOLUTION	INVESTIGATION	MODERN TOOL USAGE	THE ENGINEER & SOCIETY	ENVIRONMENT & SUSTAINABILITY	ETHICS	INDIVIDUAL AND TEAMWORK	COMMUNICATION	PROJECT MANAGEMENT & FINANCE	LIFE LONG LEARNING
	SEMESTER	PLO01	PLO02	PLO03	PLO04	PLO05	PLO06	PLO07	PLO08	PLO09	PLO10	PLO11	PLO12
DMP	SEM 1- 1 2022/2023	63				78	91		72	86	87		84
	SEM 2- 2 2022/2023	64				80			78	77	82		78
	SEM 3- 1 2023/2024	67	65			83	89			90	76		79
	SEM 4- 2 2023/2024	60	78	64		81	66	81	52			78	
	SEM 5- 1 2024/2025	72	60	80	70			89	71		80		
	SEM 6- 2 2024/2025					91	93		95	97	80		95
	AVERAGE PLO	**65**	**68**	**72**	**70**	**83**	**85**	**85**	**74**	**87**	**81**	**78**	**84**

Figure C2-5d: PLO Achievement for complete cohorts of Sesi 2:2024/2025 Session DMP students by curriculum version June 2019

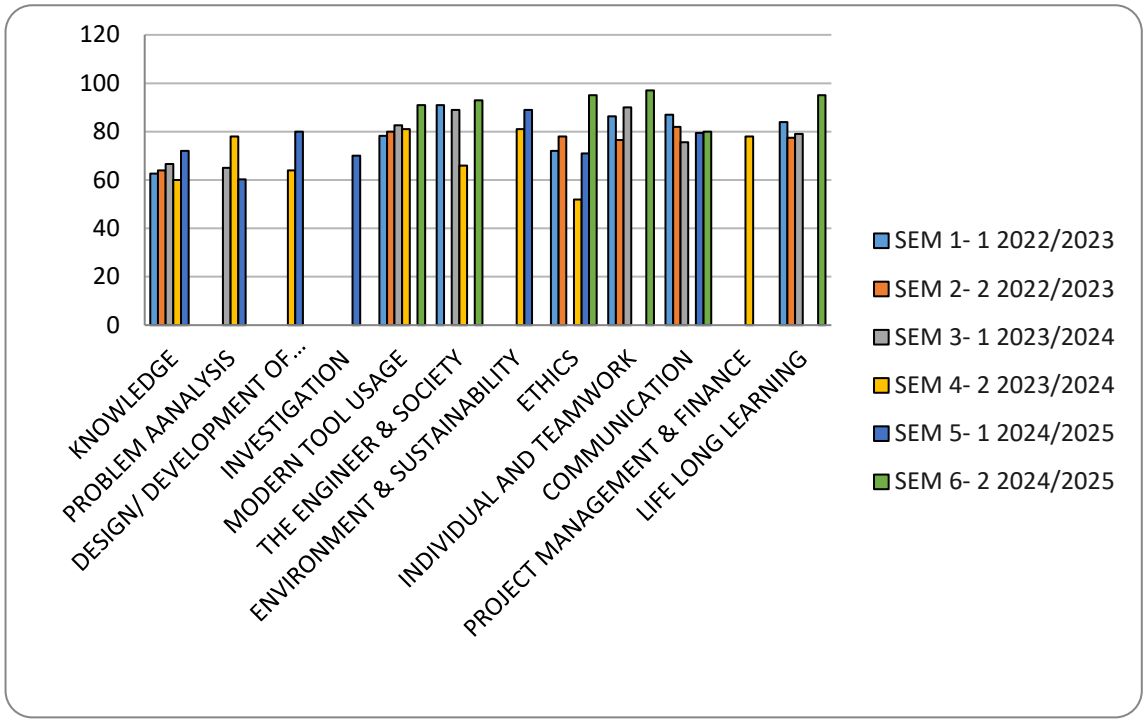


Figure C2-5d: PLO Achievement for complete cohorts of SesI 2:2024/2025 DMP students by curriculum version June 2019

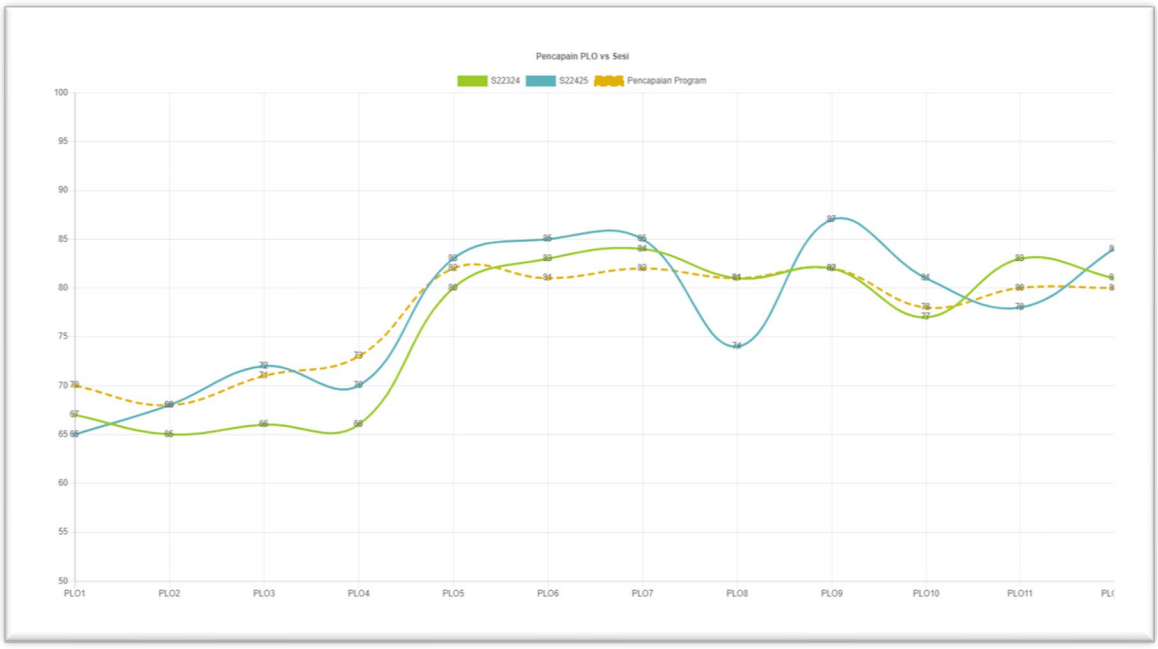


Figure C2-5e: Shows comparison PLO achievement summary between cohort Sesi 2: 2023/2024 and Sesi 2: 2024/2025 as they are using curriculum version June 2019.

All the PLO's data are keyed in on a new system called S3P shown in **Figure C2-5f**. User will login in https://app.mypolycc.edu.my/s3p/index.php

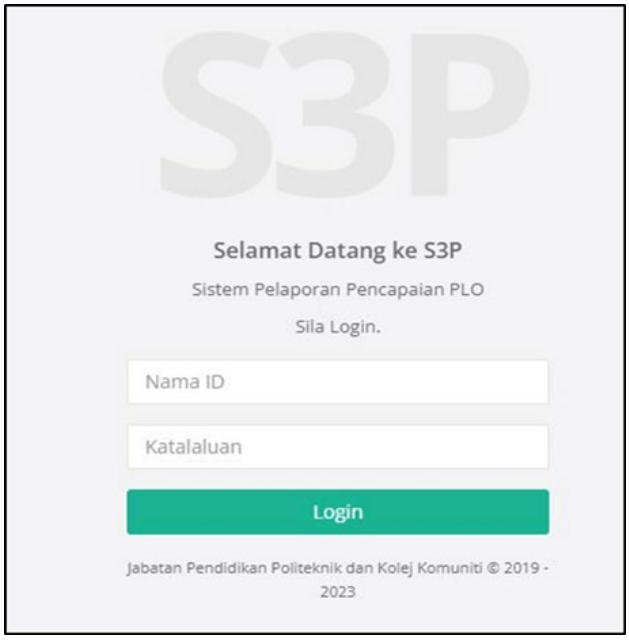


Figure C2-5f S3P interface

C2-6 Explain how the assessment results are applied to further develop and improve the programme

Course learning outcomes report involves the assessment results of course work and final examination for each course. Course Outcome Review Report (CORR) as shown in **Appendix C2-6a** is provided at the end of each course learning session. The achievement of course learning outcome and improvement suggestions (CQI) as shown in **Appendix C2-6b** need to be filled by every lecturer and Head of Programme (KP).

Programme learning outcomes report is related to the outcome of a course's learning. The Programme Learning Outcome Review Report (PLORR) is provided on a current and final semester (all PLOs) for the program. The achievement of the programme learning outcome and the proposed improvement needs to be filled by the Programme Leader and verified by the Head of Department (HOD) **Appendix C2-6c.**

Continuous Quality Improvement (CQI) can be implemented and proven by submitting a complete report with empirical data from the analyzed result. In the implementation of the CQI process shown in **Figure C2-6a**, there are some aspects that all academicians need to be emphasized. These aspects are very important in the effort to improve and strengthen the quality of the programs offered. The aspects are:

1. The implementation of OBE;
2. The achievement analysis compared to KPI;
3. The methods of measurement and assessment results;
4. The approach taken in the implementation of CQI after analyzing the assessment results
5. The data management systems and documentation.

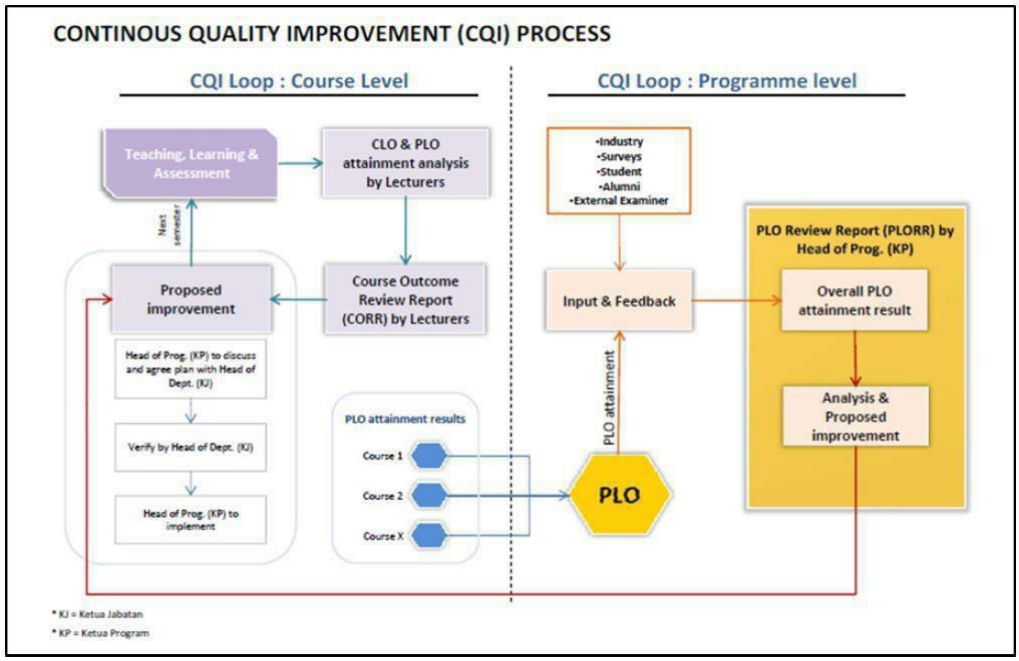


Figure C2-6a: CQI Process at Course and Programmed Level

The examples of CORR and PLORR can be viewed in **Figure C2-6b** and **Figure C2-6c.** From that reports, the group attainment for all CLOs and PLOs for each course is evaluated at the end of the semester which set at minimum achievement of 50%. Course Learning Outcome and Programme Learning Outcome achievement are utilized systematically as a source for the continual improvement of the programme. The areas that need improvement are identified and the corrective measures are suggested to be implemented in the following semester. Course coordinators will discuss with lecturers to decide CQI for next semester. This CQI information will be key in on ePNP platform for lecturers references shown in **Appendix C2-6d**.

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH
COURSE OUTCOME REVIEW REPORT (CORR)
SESSION : II : 2023/2024

1. COURSE INFORMATION

Programme	: DIPLOMA KEJURUTERAAN MEKANIKAL (PEMBUNGKUSAN) [DMP]
Class	: DMP4A, DMP6A,
Course Name	: DJP40043 - PACKAGING MATERIAL & MANUFACTURING
Lecturer	*1. NUR FARAHAIZAN BINTI IDRIS*
Number Of Student	: 22
Date	:

2. PERFORMANCE INDICATOR

		TARGET (%)	ACHIEVEMENT
1.	Student Performance : % achieving grade C and above.		77.3
2.	CLO achievement: >50% attainment for CLO's.		100.0
3.	PLO achievement: >50% attainment for PLO's.		100.0
4.	Student achieve > 80% - attendance		
5.	< 30% difference between continuos assessment (CA) and final exam (FE).	-	50.0

3. STUDENT PERFORMANCE

Grade(% of student)

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	E	E-	F
0.0	0.0	4.5	9.1	9.1	13.6	22.7	18.2	9.1	4.5	4.5	0.0	0.0	4.5

4. COURSE LEARNING OUTCOME

		Group Attainment (%)	Student Achieve >= 50%
CLO01C	Apply the properties, physical characteristics and conversion process of paper and plastic in packaging.	71.5	90.9
CLO02C	Apply the properties, physical characteristics and conversion process of metal and glass in packaging.	59.0	86.4
CLO03A	Study awareness of all learning activities undertake throughout life in the aim of improving knowledge skill and competency.	82.7	100.0

5. PROGRAMME LEARNING OUTCOME

		Group Attainment (%)	Student Achieve >= 50%
PLO001	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 in area of mechanical engineering specialized in industrial packaging.	65.3	88.6
PLO012	Recognise the need for, and have the ability for i) independent and life long learning and ii)critical thingking in the face of specialised technical knowledge.(DK8)	82.7	100.0

6. REFLECTION (KOMEN DAN CADANGAN)

PENCAPAIAN / ACHIEVEMENT	CADANGAN (Cadangan untuk baiki PLO < 50%)

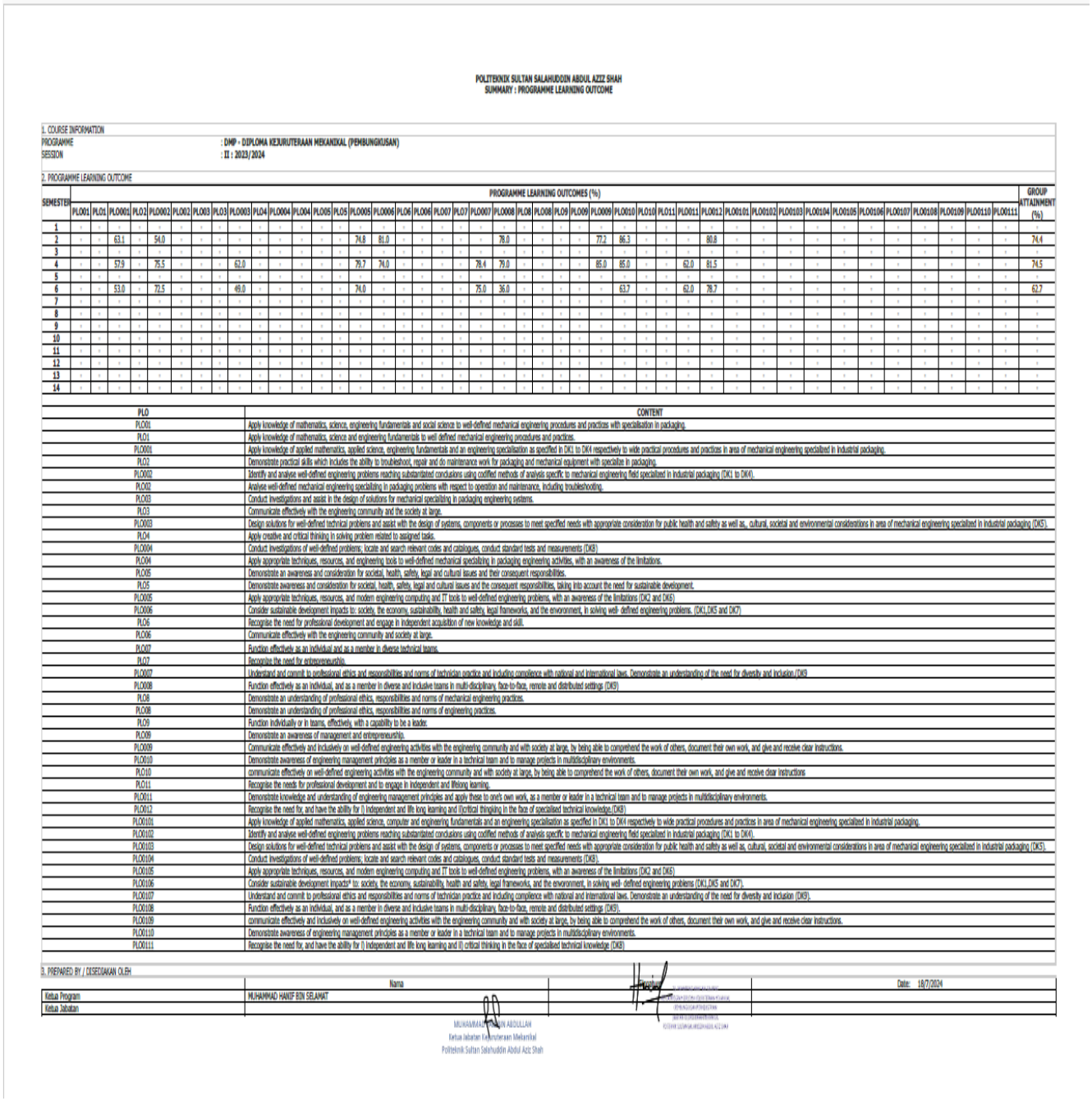
7. PREPARED BY / DISEDIAKAN OLEH

	Name	Signature	Date:
Lecturer	NUR FARAHAIZAN BINTI IDRIS		
Ketua Program	MUHAMMAD HANIF BIN SELAMAT		16/7/2024
Ketua Jabatan	MUHAMMAD FAIZ BIN ABDULLAH		16/7/2024

Ketua Jabatan Kejuruteraan Mekanikal
Politeknik Sultan Salahuddin Abdul Aziz Shah

ej: Sila semak samada pensyarah telah membuat salinan/jana clo/plo. Untuk semakan, sila klik disini
ap Maklum

Figure C2-6b: Course Outcome Review Report (CORR)



POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH
SUMMARY : PROGRAMME LEARNING OUTCOME

1. COURSE INFORMATION

PROGRAMME : DMP - DIPLOMA KEJURUTERAAN MEKANIKAL (PEMBUNGKUSAN)
SESSION : II : 2023/2024

2. PROGRAMME LEARNING OUTCOME

SEMESTER	PROGRAMME LEARNING OUTCOMES (%)																																										GROUP ATTAINMENT (%)
	PLO01	PLO1	PLO001	PLO2	PLO002	PLO02	PLO03	PLO3	PLO003	PLO4	PLO004	PLO04	PLO05	PLO5	PLO005	PLO006	PLO6	PLO06	PLO07	PLO7	PLO007	PLO008	PLO8	PLO08	PLO9	PLO09	PLO009	PLO010	PLO10	PLO11	PLO011	PLO012	PLO101	PLO102	PLO103	PLO104	PLO105	PLO106	PLO107	PLO108	PLO109	PLO110	PLO111	
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	63.1	-	54.0	-	-	-	-	-	-	-	-	-	74.8	81.0	-	-	-	-	78.0	-	-	-	-	-	77.2	86.3	-	-	80.8	-	-	-	-	-	-	-	-	-	-	-	-	-	74.4
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	57.9	-	75.5	-	-	-	62.0	-	-	-	-	-	79.7	74.0	-	-	-	-	78.4	79.0	-	-	-	-	85.0	85.0	-	-	62.0	81.5	-	-	-	-	-	-	-	-	-	-	-	-	74.5
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	53.0	-	72.5	-	-	-	49.0	-	-	-	-	-	74.0	-	-	-	-	-	75.0	36.0	-	-	-	-	-	63.7	-	-	62.0	78.7	-	-	-	-	-	-	-	-	-	-	-	-	62.7
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

PLO	CONTENT
PLO01	Apply knowledge of mathematics, science, engineering fundamentals and social science to well-defined mechanical engineering procedures and practices with specialisation in packaging.
PLO1	Apply knowledge of mathematics, science and engineering fundamentals to well defined mechanical engineering procedures and practices.
PLO001	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 in area of mechanical engineering specialised in industrial packaging.
PLO2	Demonstrate practical skills which includes the ability to troubleshoot, repair and do maintenance work for packaging and mechanical equipment with specialise in packaging.
PLO002	Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechanical engineering field specialised in industrial packaging (DK1 to DK4).
PLO02	Analyse well-defined mechanical engineering specializing in packaging problems with respect to operation and maintenance, including troubleshooting.
PLO03	Conduct investigations and assist in the design of solutions for mechanical specializing in packaging engineering systems.
PLO3	Communicate effectively with the engineering community and the society at large.
PLO003	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 as well as, cultural, societal and environmental considerations in area of mechanical engineering specialised in industrial packaging (DK5).
PLO4	Apply creative and critical thinking in solving problem related to assigned tasks.
PLO004	Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8)
PLO04	Apply appropriate techniques, resources, and engineering tools to well-defined mechanical specializing in packaging engineering activities, with an awareness of the limitations.
PLO05	Demonstrate an awareness and consideration for societal, health, safety, legal and cultural issues and their consequent responsibilities.
PLO5	Demonstrate awareness and consideration for societal, health, safety, legal and cultural issues and the consequent responsibilities, taking into account the need for sustainable development.
PLO005	Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6)
PLO006	Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well- defined engineering problems. (DK1,DK5 and DK7)
PLO6	Recognise the need for professional development and engage in independent acquisition of new knowledge and skill.
PLO06	Communicate effectively with the engineering community and society at large.
PLO07	Function effectively as an individual and as a member in diverse technical teams.
PLO7	Recognise the need for entrepreneurship.
PLO007	Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (DK9
PLO008	Function effectively as an individual, and as a member in diverse and inclusive teams in multi-disciplinary, face-to-face, remote and distributed settings (DK9)
PLO8	Demonstrate an understanding of professional ethics, responsibilities and norms of mechanical engineering practices.
PLO08	Demonstrate an understanding of professional ethics, responsibilities and norms of engineering practices.
PLO9	Function individually or in teams, effectively, with a capability to be a leader.
PLO09	Demonstrate an awareness of management and entrepreneurship.
PLO009	Communicate effectively and inclusively 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.
PLO010	Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.
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	Recognise the needs for professional development and to engage in independent and lifelong learning.
PLO011	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.
PLO012	Recognise the need for, and have the ability for i) Independent and life long learning and ii)critical thinkging in the face of specialised technical knowledge.(DK8)
PLO0101	Apply knowledge of applied mathematics, applied science, computer and engineering fundamentals and an engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices in area of mechanical engineering specialised in industrial packaging.
PLO0102	Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechanical engineering field specialised in industrial packaging (DK1 to DK4).
PLO0103	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 as well as, cultural, societal and environmental considerations in area of mechanical engineering specialised in industrial packaging (DK5).
PLO0104	Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8).
PLO0105	Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6)
PLO0106	Consider sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well- defined engineering problems (DK1,DK5 and DK7).
PLO0107	Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (DK9).
PLO0108	Function effectively as an individual, and as a member in diverse and inclusive teams in multi-disciplinary, face-to-face, remote and distributed settings (DK9).
PLO0109	communicate effectively and inclusively 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.
PLO0110	Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.
PLO0111	Recognise the need for, and have the ability for i) Independent and life long learning and ii) critical thinking in the face of specialised technical knowledge (DK8)

3. PREPARED BY / DISEDIAKAN OLEH

	Nama		Date: 18/7/2024
Ketua Program	MUHAMMAD HANIF BIN SELAMAT		
Ketua Jabatan		MUHAMMAD [illegible] BIN ABDULLAH Ketua Jabatan Kejuruteraan Mekanikal Politeknik Sultan Salahuddin Abdul Aziz Shah	

Figure C2-6c: Programme Learning Outcome Review Report of DMP (PLORR)

C2-7 Describe the materials, including student work and other tangible materials that demonstrate achievement of the Programme Outcomes.

Assessment materials to achieve PLOs are equipped with both academic and non-academic skills and competencies.

(i) Academic

Referring to **Figure C2-7a,** the assessment materials evaluate the student knowledge, skills and affective domains that directly measure achievement of expected outcomes. These include quiz and test, presentation, assignment, capstone, case study, end of chapter, project, journal reflective, portfolio and other assessment tasks. Different CLOs can be assessed concurrently in one assessment task but each outcome is evaluated separately. Rubrics for skills and affective domains are developed in order to standardize the measurement of performance. Besides continuous assessments, the final examinations also carry marks for the CLO for the courses. The final examination only evaluates the students' knowledge.

Figure C2-7a: Types of assessments used for evaluation

(i) Non-academic

Considering that holistic graduates should be equipped with non-academic skills and competencies also, assessment materials that contribute to the PLO's attainment include records of various activities such as clubs, sports, uniform bodies and others. Students are encouraged to take part in any level activities organized by the polytechnic or outside which may help them raise their self-esteem, develop the spirit and connect with the adults in the community in a positive manner creating a good situation for all.

C3-1. Discuss the programme structure and course contents to show how they are appropriate to, consistent with, and support the development of the range of intellectual and practical skills and attainment or achievement of the Programme Outcome.

A. Programme Structure

Programme structure and course content are the main elements in the Diploma in Mechanical Engineering (Packaging) (DMP) curriculum document. This document is prepared by the Department of Polytechnic and Community College Education (DPCCE) during the curriculum design and review stage in the curriculum development process. DMP programme structure is based on the MQA Programme Standard for Engineering and Engineering Technology. According to the mapping shown in **Appendix C3-1a**, all of the MQA's credit requirements have been fulfilled by the DMP programme and also complied with ETAC qualifying requirements based on Engineering Technician Education Programme Accreditation Manual 2024. There are four components in the programme structure: compulsory, common core, discipline core and elective. The courses under the modules are derived from the Body of Knowledge (BoK) for all programmes in polytechnics and the BoK of Mechanical Engineering (Packaging).

The process of designing the curriculum starts with developing the courses based on the polytechnic general BoK framework. **Figure C3-1a** shows the BoK for all programmes in polytechnics. The framework comprises five components which are Technical, Personal Development, Mathematics, Sciences, and Workplace Competencies. The DPCCE designs the content of the technical courses concerning the mechanical engineering requirements.

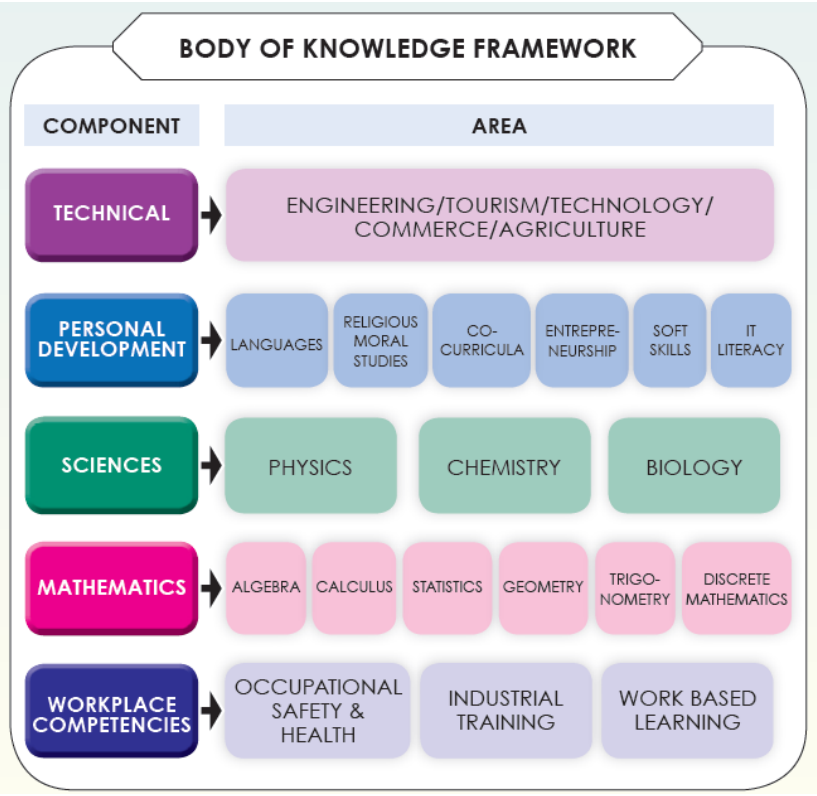

Figure C3-1a: The general Bok for all programmes in polytechnic

Course content on Personal Development, Mathematics, Science and Workplace Competencies is designed by the JPPKK under the General Studies, Mathematics, Science and Computer Unit. This committee comprises content experts from the Department of General Studies and the Department of Mathematics, Science and Computer in Polytechnic.

The courses in the components support the programme outcomes such as foundation knowledge for mechanical engineering, lifelong learning, communication skills and social attributes. The list of non-engineering courses mapping with General BoK is shown in **Appendix C3-1b.**

The technical contents are derived from BoK's Mechanical Engineering framework and mapped to the engineering requirements. There are eleven (12) knowledge areas considered in designing the content which are Solid Mechanics, Statics & Dynamics, Thermodynamics & Heat, Fluid Mechanics, Materials, Mechiancal Design, Packaging and Mechiancal Workshop Practices, Manufacturing, Instrumentation & Control, Packaging Design, Electrical and Science as shown in **Figure C3-1b**. These areas of knowledge represent the field of mechanical engineering work that content experts considered during the designing stage. Input and feedback from stakeholders play an important role in selecting the course contents that comply with industrial demands.

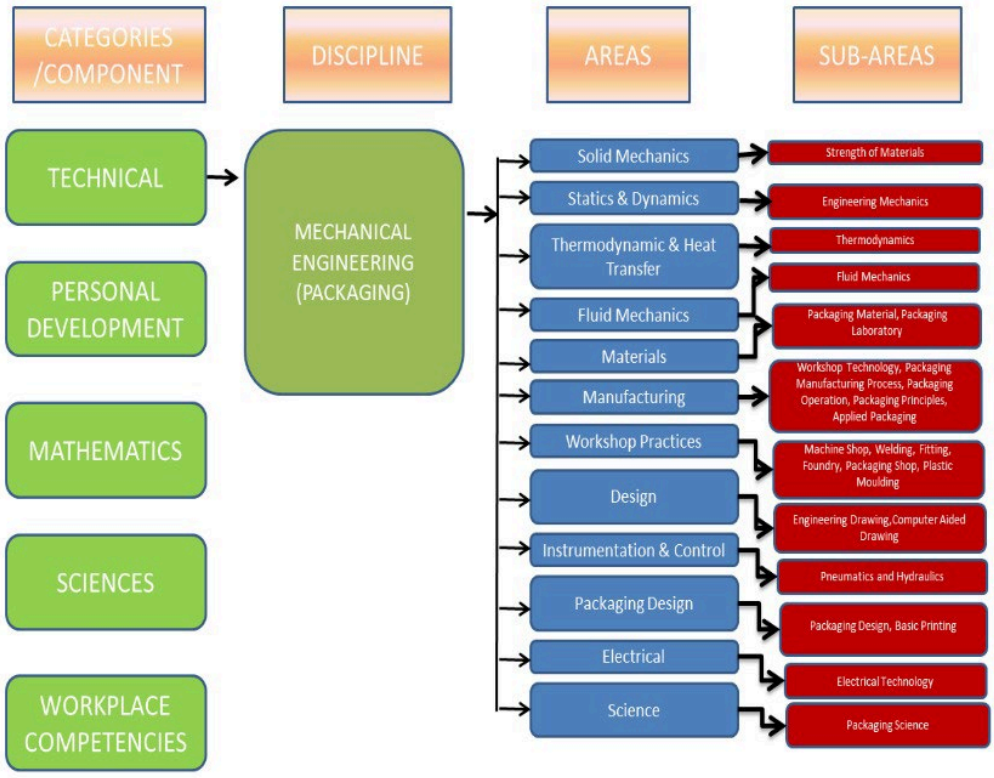

Figure C3-1b: Body of Knowledge of Mechanical Engineering (Packaging)(DMP)

There are 28 courses on technical components which comprise discipline core and elective modules as shown in **Appendix C3-1c**. This appendix also shows the relationship between the BoK and Dublin knowledge profiles to indicate conformity.

The non-engineering and engineering courses are distributed into 6 semesters. The credit unit used in the programme structure is based on Student Learning Time (SLT) as defined in the MQF and the ETAC manual. The distribution of courses for each semester is shown in **Appendix C3-1d.**

The mapping between CLO versus PO Matrix is stated in the curriculum documents. The mapping for each course versus POs is stated in the programme information document as shown in **Table C3-1a.** The distribution of Engineering Courses is shown in **Table C3-1b** and the calculations on ETAC practical component requirements are shown in **Table C3-1c.**

Table C3-1a: Courses versus Programme Outcomes Matrix

NO	CODE		COURSES	PROGRAMME LEARNING OUTCOME (PLO)											
				PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
				Knowledge	Problem Analysis	Design / Development of	Investigation	Modern Tool Usage	The Engineer and Society	Environment and Sustainability	Ethic	Individual and Teamwork	Communication	Project Management and Finance	Life Long Learning
				CLS1	CLS2	CLS2	CLS2	CLS 3a/c	CLS3b	CLS5	CLS5	CLS3d	CLS3b	CLS4	CLS4
COMPULSORY															
1	DUE	10012	Communicative English 1										✔		✔
2	DUE	30022	Communicative English 2										✔		✔
3	DUE	50032	Communicative English 3										✔		✔
4	MPU	23052	Sains Teknologi Dan Kejuruteraan Dalam Islam*								✔				✔
5	MPU	23042	Nilai Masyarakat Malaysia**								✔				✔
6	MPU	21032	Penghayatan Etika dan Peradaban								✔				✔
7	MPU	22012	Entrepreneurship										✔	✔	
8	MPU	24XX1	Unit Beruniform 1									✔			✔
9	MPU	24XX1	Unit Beruniform 2									✔			✔
10	MPU	24XX1	Kelab/Persatuan									✔			✔
11	MPU	24XX1	Sukan									✔			✔

COMMON CORE												
Occupational, Safety and Health for Engineering	✔							✔		✔		
Engineering Science	✔				✔							
Engineering Mathematics 1	✔				✔					✔		
Engineering Mathematics 2	✔				✔					✔		
Engineering Mathematics 3	✔				✔					✔		
Engineering and Society						✔	✔	✔				
DISCIPLINE CORE												
Engineering Drawing	✔				✔			✔				
Workshop Technology					✔	✔						
Mechanical Workshop Practice 1					✔				✔			
Electrical Technology	✔				✔							
Thermodynamics	✔				✔							
Fluid Mechanics	✔				✔							
Engineering Mechanics	✔	✔			✔							
Strength of Materials	✔	✔			✔							
Computer Aided Design	✔				✔					✔		
Pneumatic and Hydraulics	✔		✔		✔							
Project 1		✔					✔				✔	
Project 2			✔	✔						✔	✔	

SPECIALIZATION												
Packaging Workshop Practice 1					✔	✔						
Packaging Workshop Practice 2										✔		✔
Packaging Principle	✔								✔			
Packaging Workshop Practice 3					✔	✔						
Packaging Material and Manufacturing	✔											✔
Packaging Design			✔		✔							
Packaging Line Operation	✔	✔									✔	
Applied Packaging		✔		✔			✔					
ELECTIVE												
Industrial Management		✔						✔		✔		
Instrumentation and Control		✔		✔						✔		
Engineering Plant Technology		✔						✔		✔		
Railway Track System	✔				✔				✔			
C Programming	✔		✔									✔
Programmable Logic Control	✔	✔	✔									
Control System		✔	✔						✔			
Quality Control	✔	✔							✔			
FREE ELECTIVES												
Design Thinking		✔								✔		
INDUSTRIAL TRAINING												
Engineering Industrial Training					✔	✔		✔	✔	✔		✔
TOTAL	**20**	**12**	**6**	**3**	**19**	**5**	**3**	**6**	**9**	**16**	**4**	**14**

Table C3-1b: The Distribution of Engineering Courses

Semester	Course Code	Course	Course Type	Contact Hours			Credits
				L	P	T	
Semester 1	DJJ10013	Engineering Drawing	Core	1	3	0	3
	DJJ10033	Workshop Technology	Core	0	4	0	2
	DJJ10022	Mechanical Workshop Practice 1	Core	3	0	0	3
Semester 2	DJJ20042	Electrical Technology	Core	2	2	0	3
	DJJ20073	Fluid Mechanics	Core	2	2	0	3
	DJJ30093	Engineering Mechanics	Core	2	2	0	3
	DJP20082	Packaging Workshop Practice 1	Specialize	0	4	0	2
Semester 3	DJJ20063	Thermodynamics	Core	2	2	0	3
	DJJ30103	Strength of Materials	Core	2	2	0	3
	DJJ30122	Computer Aided Design	Core	1	2	0	2
	DJP30012	Packaging Workshop Practice 2	Specialize	0	4	0	2
	DJP30022	Packaging Principle	Specialize	2	0	0	2
Semester 4	DJJ40153	Pneumatic and Hydraulics	Core	2	2	0	3
	DJJ40182	Project 1	Core	2	0	0	2
	DJP40032	Packaging Workshop Practice 3	Specialize	0	4	0	2
	DJP40043	Packaging Material & Manufacturing	Specialize	3	0	0	3
	DJP40053	Packaging Design	Specialize	2	2	0	3
Semester 5	DJJ50193	Project 2	Core	0	4	0	3
	DJP50063	Packaging Line Operation	Specialize	3	0	0	3
	DJP50073	Applied Packaging	Specialize	3	0	0	3
Semester 5	DJJ42022	Industrial Management	*Elective	2	0	0	2
	DJJ52012	Engineering Plant Technology	*Elective	2	0	0	
	DJJ52012	Engineering Plant Technology	*Elective	2	0	0	
Semester 6	DUW600610	Engineering Industrial Training	Core	20 weeks			10
TOTAL CREDIT HOURS ENGINEERING RELATED COURSES							**65**

Table C3-1c: Practice oriented components courses

TYPE	CODE	COURSE	CREDIT	F2F HOURS	NF2F HOURS	TOTAL PRACTICAL SLT CREDIT
Common Core	DBS10012	Engineering Science	2	14	0	0.4
Discipline Core	DJJ10013	Engineering Drawing	3	40	51.1	1.1
Discipline Core	DJJ10022	Mechanical Workshop Practice 1	2	56	24	2.0
Discipline Core	DJJ20053	Electrical Technology	3	10	20	0.8
Discipline Core	DJJ20063	Thermodynamics	3	10	20	0.8
Discipline Core	DJJ20073	Fluid Mechanics	3	10	20	0.8
Specialize	DJJ20082	Packaging Workshop Practice 1	2	56	24	2.0
Discipline Core	DJJ30093	Engineering Mechanics	3	10	20	0.8
Discipline Core	DJJ30103	Strength Of Materials	3	10	20	0.8
Discipline Core	DJJ30122	Computer Aided Design	2	26	25.3	2.0
Specialize	DJP30012	Packaging Workshop Practice 2	2	56	24	2.0
Specialize	DJP40032	Packaging Workshop Practice 3	2	56	24	2.0
Specialize	DJP40053	Packaging Design	3	10	20	0.8
Discipline Core	DJJ40153	Pneumatic & Hydraulics	3	10	20	0.8
Discipline Core	DJJ50193	Project 2	3	56	64	3.0
Industrial Training	DUT60010	Engineering Industrial Training	10			10
TOTAL PRACTICAL COMPONENT SLT CREDIT						30.9

The mapping of DMP's PLOs to the ETAC Knowledge Profile (DK), Well-Defined Problem Solving (DP) and Well-Defined Engineering Activities (NA) are shown in **Appendix C3-1e** and mapping of DMP's courses to the ETAC Knowledge Profile (DK), Well-Defined Problem Solving (DP) and Well-Defined Engineering Activities (NA) are shown in **Appendix C3-1f.**

The curriculum document is distributed to polytechnics using the Curriculum Information Document Online System (CIDOS) portal http://portal.cidos.edu.my/. The current curriculum document of DMP was published in June 2019.

C3-2. Discuss the programme delivery and assessment methods and how these are appropriate to, consistent with, and support the development of the range of intellectual and practical skills and attainment or achievement of the PO.

C3-3. The information required in items C3-1 and C3-2 should include but is not limited to the following:

- **A matrix linking courses to PO to identify the contribution of each course to the PO.**
- **Distribution of the engineering technician courses (including industrial training and WBL courses) and general education courses throughout semesters such as finance, management and Mata Pelajaran Umum (MPU) courses.**
- **Mapping of the courses to the Knowledge and Attitude Profile as in Appendix B.**
- **Distribution of the courses offered according to semester.**

B. Delivery Methods

The DMP programme employs the Outcome-Based Education (OBE) approach as the learning model in the curriculum. This educational approach encourages the interaction between lecturers and students as it requires active participation from students. The delivery process focuses on Student-Centred Learning (SCL) whereby students are encouraged to participate actively in face-to-face delivery teaching method in the classroom. SCL requires students to be more responsible in learning and utilizes self-determined study methods. By implementing this,

- Students are required to be more active both individually as well as in teams;
- Lecturers will focus more on promoting learning and facilitating the learning process;
- Students will become independent learners, as lecturers act mostly to create a learning environment which can motivate students to be more active in searching course materials.

As part of the integrated approach, the programme adopts a wide variety of teaching-learning methods as a whole. These methods include the use of modern technology in classroom instruction, tutorials, project-based learning in laboratories and assignments, open-ended problem solving, seminar presentation and attendance, project demonstration, work-based learning approach, service learning, industrial-academic visits and industrial visiting lecturers.

Each course is accompanied by a course outline with a plan of weekly teaching and learning activities. It consists of the identity and description of the course, instructional analysis, course learning objectives, course outcomes, teaching and learning methods, and outlines of the course

content, course schedule, assessment methods, and the list of supporting literature. The content of the course outlines is discussed with the students at the beginning of the semester.

The fundamental requirement in OBE is the identification of the student learning outcomes. As such, assessment methodologies for all programme outcomes and their relationship have been identified and shown in **Appendix C3-2a.**

C. Practice-Oriented Components

Theoretical lectures are complemented by hands-on skills and laboratory work which are attached to relevant courses. The students worked in groups of 3 to 4 during practical sessions, and carried out experiments related to the theory learned through lectures. Thus, the students gain experience using the equipment in executing the experimental works.

D. Final-Year Project (project-based)

Final-Year Project is a compulsory course for diploma programmes before graduation. This course enables students to apply their prior knowledge and skills by contributing ideas, creativity, innovation and problem-solving to a project with commercial values. Students will be guided and supervised by a lecturer who is involved in the teaching and learning process theoretically, and practically, as well as through observations and assessments.

Project 1 in semester 4 provides the students with knowledge regarding the implementation and development of a project based on problem statements, ideas and innovation. The students are exposed to the selection and early planning of a project, techniques to develop a project, application of the theory as well as methods of preparing and presenting the project.

Project 2 in semester 5 is the continuation of Project 1. This course focuses on methods of construction, testing, troubleshooting, debugging, repairing and completing the project planned. They are also required to prepare a project report and deliver a project presentation at the end of the semester.

The students are divided into groups of 3 to 4 under the guidance of a supervisor but the students are assessed individually. The assessment includes the following:

Assessment Rubric DJJ40182 Project 1 as in **Appendix C3-2b**

a. Report - 40%
b. Log Book - 40%
c. Presentation - 20%

Assessment Rubric DJJ50193 Project 2 as in **Appendix C3-2c**.

a. Project Report - 40%
b. Log Book - 40%
c. Presentation - 20%

Industry practitioners are invited as judges to give input and advice on the student's project during the project presentation. Guidelines on the planning, implementation and reporting of the final-year project can be referred to the Students' Project Guide Book (Diploma Programme) Polytechnic Malaysia 2021 Edition (**Appendix C3-2d**)

E. Industrial Training

Industrial Training is a compulsory 10-credit-hour course that exposes students to an actual engineering practice in various industries in their field of study. All students have to undergo 20 weeks of industrial training during their final semester as part of their graduation requirements.

The Industrial Training Course is introduced to empower the competencies required to enhance the graduates' ability to work. It provides students with opportunities to learn and gain practical experience in the real workplace to improve graduate employability.

This course provides exposure to students in terms of technology literacy, effective communication, social skills and teamwork, policies, procedures and regulations, professional ethics and reporting. It also equips students with real working experience, thus helping to build up enthusiasm and proactive attitude and increasing their confidence level in becoming excellent co-players in the industry after they have graduated soon.

Upon completion of industrial training courses, students are expected to be able to:

- Apply related knowledge and skills at the workplace
- Communicate effectively with others
- Practice teamwork
- Professionally and ethically comply with policies, procedures and rules of the organization
- Perform the task assigned (during the industrial training) according to the prescribed format

The assessment process is divided into two categories namely:

1. Assessment by industry (60%)
    - Performance Appraisal (55%)
    - Logbook (5%)

2. Assessment by polytechnic (40%)
    - Logbook (10%)
    - Student Character Validation (observation) (10%)
    - Industrial Training Final Report (10%)
    - Presentation (10%)

The assessment forms to evaluate the students are shown in **Appendix C3-2e**.

F. Other Methods

Other modes of teaching deliveries apart from teaching and learning activities in the classroom, including online learning, Industry Visiting Lecturer Programme, work-based learning and service learning.

A system called 'Curriculum Information Development Online System' (CIDOS) is used as a Learning Management System (LMS) for students and lecturers to interact and exchange knowledge and information.

i. Blended Learning (BL)

BL is a formal education programme that involves combining online learning with traditional classroom methods that require the physical and virtual presence of both a teacher and students over a certain period. Polytechnic Malaysia has set up a requirement that requires each institution to practice at least 70% of their courses in the Blended form. The breakdown of the course is determined by using the Blended Learning Distribution Table (BLDT) and the Blended Learning Fulfilment Record (BLFR) as in **Appendix C3-2f** and **Appendix C3-2g.** The BL and face-to-face elements include the following components:

a. Online lectures/videos
b. eNotes (pdf/doc/etc.)
c. eCollaborative classes (online forums, collaborative activities)
d. Collaborative classes (face-to-face activities, in the form of tutorials, project-based learning, CDIO, etc.)

ii. Industry Visiting Lecturer Programme

The Industry Visiting Lecturer Programme is an approach introduced to vary the teaching and learning delivery methods to enhance the student's understanding of specific learning domains. Industry involvement enables students to relate the theories learned in the classroom to real work situations. There are two approaches under this framework, namely:

- Industry academic visits
- Visiting industry

The objective of an industrial academic visit is to provide students with an excellent opportunity to interact with industries and learn more about the industrial environment. To go beyond academics, the industrial-academic visit provides students with a practical perspective on the world of work. It provides students with an opportunity to learn practically through interaction, working methods and employment practices. It gives them exposure to new technology and work practices as opposed to receiving solely theoretical knowledge being taught in class.

In the industry visiting lecturer programme, the industry practitioners are invited to give lectures on relevant topics to the students. This allows the students to gain insight into current technological developments in engineering. **Appendix C3-2i** shows the list of industries involved in this programme from 2023 - 2024

G. Assessment Method

The programme assesses the learning outcomes of the students through various types of assessments which cover both formative and summative assessments. The assessment methods for students are consistent with the specified learning domain.

The course assessments are divided into two components namely Continuous Assessments (CA) which are carried out throughout the semester, and the Final Examinations (FE) which are conducted at the end of each semester. **Appendix C3-2j** shows the percentage distribution between CA and FE for all courses in the programme.

i. Continuous Assessments

Each course has its appropriate assessment methods depending on the characteristics of the course itself. Students are assessed through various modes such as theory tests, assignments, quizzes, oral presentations, demonstrations, reports, practical work and practical tests. The achievement of learning outcomes is measured using these various methods of assessment. The specific assessments are stated in the Assessment Specific Table (AST) for the respective course syllabus. **Appendix C3-2k** shows the Assessment Specific Table (AST) for semester 2 courses: DJJ20073 – Fluids Mechanics.

Course Item Specification Table (CIST) is used in the process of planning and monitoring the development of the items for the coursework assessment. Through CIST, the distribution level of learning domains is monitored. In CIST, the learning outcomes, learning domain, mark distribution and types of assessment items are provided. **Appendix C3-2l** shows the developed CIST for the Engineering Mechanics course.

ii. Final Examination (FE)

Final examination is carried out at the end of each semester. It is a 2-hour examination session in 2 weeks. Evaluation through final examination involves assessment of the Cognitive Learning Domain (LD1). FE items are developed by the lecturers based on the Final Exam Item Specification Table (FEIST) for each course. FEIST is used to coordinate and ensure the assessment items are developed according to the predetermined Course Learning Outcome (CLO). **Appendix C3-2m** illustrates the Final Examination Specification Table (FEIST) for DJJ50063 Packaging Line Operation

a. Moderation process for assessment on final examination papers and marking schemes

The reliability and validity of the assessments and evaluation for all final examination papers and scripts are conducted using a moderation process. This process is conducted at the department level based on the assessment activities scheduled by the department moderation coordinators and their committee members. The moderation process of assessing and evaluating students' final examination scripts provides students with the fairness and validity of their assessments by the

assessors. The procedure applied and the flowchart of the process can be referred to **Appendix C3-2n.**

iii. Grade Point System and Grading System

a. Grade Point System

The evaluation system of the polytechnics under the Higher Education Ministry is based on the quantitative assessment method of students' performance for a particular programme which is known as the Grade Point System.

According to the Grade Point System, students' performance for a particular course is based on the Grading System in which the student's achievement is assessed using two types of measurements, i.e.:

- Grade Point Average (GPA);
- Cumulative Grade Point Average (CGPA).

b. Grading System.

Marks obtained by students in a particular course will be given grade points and grades according to the groupings in **Appendix C3-2o.** The detailed procedure of examination and evaluation can be referred to *Buku Arahan-arahan Peperiksan dan Kaedah Penilaian* issued by the Examination and Evaluation Division, DPE shown in **Appendix C3-2p**.

An instruction by DPCCE circulated on 10 February 2023 updated that passing requirements for a subject must consist of a combined minimum of 40% for continuous assessment and 20% for final examination referred to in **Appendix c3-2q**. This is in line with one of the 6 programme standards which require a minimum passing rate for both continuous assessment and final assessment/ final examination.

The assessment to evaluate the achievement of the Programme Outcomes is carried out both at programme level as well as the course level. The evaluation process of the course learning outcomes and programme outcomes have been explained in **Section C2**. The data from the course learning outcome review report (CLORR) and programme learning outcome review report (PLORR) is analysed by the Academic Committee of the programme to identify the necessary measure for improvement.

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C3-4. Discuss how benchmarking report/s and feedback from stakeholders have been considered in Academic

Benchmarking is a way of discovering what is the best performance being achieved. The objective of benchmarking is to use the data gathered in benchmarking process to identify areas where improvements can be made. The report for benchmarking is appended in **Appendix C7-4a**, all the feedback and outcome from the benchmarking then been considered to be presented

in the Academic department meeting as platform to inform the best practice which can be used in the curriculum development.

C3-5. Discuss how the requirements of Well-defined Engineering Problem Solving (WEPS) and Well-defined Engineering Activities (WEA) have been addressed

The requirements of WEPS and WEA have been systematically addressed through the CLO–WEPS/WEA mapping in the curriculum. Each CLO is carefully aligned with the relevant category of engineering problem solving or activity, ensuring For WEPS – The mapped CLOs emphasize application of established principles, methods, and tools to solve problems with clear specifications and predictable solutions.

For WEA – The mapped CLOs ensure students are engaged in structured, supervised engineering activities that follow standard procedures and practices. These activities are well-defined, limited in complexity, and through this CLO mapping, the program provides clear evidence that both WEPS and WEA requirements are fully integrated and addressed in teaching, learning, and assessment practices.

C3-6. Discuss laboratory exercises, including delivery approach and assessment scheme; and how these are mapped to PO.

All laboratory exercises are mapped to the relevant Programme Outcomes (PO) to ensure balanced development of knowledge, skills, and attitudes. Typically, the exercises address PO1 (Engineering Knowledge), PO2 (Problem Analysis), PO4 (Investigation), PO5 (Modern Tool Usage), PO9 (Teamwork), and PO10 (Communication). In certain cases, PO3 (Design/Development of Solutions) and PO12 (Life-long Learning) are also addressed when the exercise requires design of procedures, use of engineering software, or self-directed learning. Example of rubric related to the laboratory exercise as in **Appendices C3-6a** Labsheet and Rubric DJJ20073 Fluid Mechanics.

C3-7. Discuss Industrial Training scheme and how it is mapped to PO.

Industrial Training is a compulsory component designed to expose students to real workplace practices and professional responsibilities. Through placement in relevant industries, students perform assigned tasks, communicate with supervisors, work both independently and in teams, and practice ethical and safe conduct in line with organizational policies. They are also required to prepare technical reports and demonstrate adaptability in handling workplace challenges.

The mapping of CLOs to POs shows that Industrial Training contributes significantly to the attainment of PO1, PO2, PO6, PO7, PO8, PO9, PO10, and PO11. These outcomes cover technical competence, problem-solving, ethics, teamwork, communication, sustainability awareness, and lifelong learning. Assessment is carried out through performance appraisals, observation, logbooks, presentations, and industrial training reports, ensuring that students are evaluated holistically in both technical and non-technical domains.

Table C3-7a: Mappinng CLOS to POS for Industrial Training Scheme

CLO	Course Learning Outcomes (CLO)	PROGRAM LEARNING OUTCOME												Teaching Methods	Assessment Methods
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12		
CLO1	Perform the assigned task accordingly based on job scope requirement (P4)				/									Demonstration, Observation, Discussion, Presentation & Coaching (refer to the Industrial	Performance Appraisal
CLO2	Demonstrate responsibilities as an engineering technician while dealing with people of various background						/							Demonstration, Observation, Discussion, Presentation & Coaching (refer to the Industrial	Performance Appraisal & Student Character Validation
CLO3	Practice good working ethics while undergoing industrial training (A5)								/					Demonstration, Observation, Discussion, Presentation & Coaching (refer to the Industrial	Performance Appraisal & Student Character Validation
CLO4	Display ability to work in a team or independently based on the given task (P4)									/				Demonstration, Observation, Discussion, Presentation & Coaching (refer to the Industrial	Performance Appraisal
CLO5	Demonstrate oral communication skill in performing job requirement (A3)							/			/			Demonstration, Observation, Discussion, Presentation & Coaching (refer to the Industrial	Performance Appraisal, Student Character Validation
CLO6	Write a report based on given task accordingly to technical practice (C3)										/			Demonstration, Observation, Discussion, Presentation & Coaching (refer to the Industrial	Log Book & Final Industrial Training Report
CLO7	Display life long learning skill in completing the given task (P4)												/	Demonstration, Observation, Discussion, Presentation & Coaching (refer to the Industrial	Performance Appraisal & Presentation

C3-8. Describe exposure to engineering practice and how it is mapped to PO. Give examples of engineering practice activities.

Students are systematically exposed to engineering practice through structured teaching, learning, and industrial-based activities. These activities allow students to apply theoretical knowledge, develop practical competencies, and experience real workplace environments. Such exposures are carefully designed to ensure alignment with Programme Outcomes (PO), thereby equipping graduates with the necessary skills, attitudes, and professional values required in the engineering field.

Table C3-7b: Mapping Example of Engineering Practice to Program Outcomes

Engineering Practice Activity	Description	Mapped to Programme Outcomes (PO)
Laboratory & Workshop	Machining, fitting, measurement, and testing using industry-standard tools and equipment.	PLO2 – Problem Analysis: Identify and analyze well-defined engineering problems. PLO4 – Investigation: Conduct investigations of well-defined problems using structured methods. PL O5 – Modern Tool Usage: Apply appropriate techniques, resources, and modern engineering tools.
Industrial Training	Hands-on training in industries (maintenance, production, quality control).	PLO6 – Engineer and Society: Demonstrate awareness of societal, health, safety, legal and cultural issues.

		PLO7 – Environment and Sustainability: Understand the impact of engineering solutions in environmental and sustainable contexts. PLO8 – Ethics: Apply ethical principles and commit to professional ethics and responsibilities.
Projects	Solving real engineering problems through design, fabrication, and process improvement.	PLO3 – Design/Development of Solutions: Design solutions for well-defined engineering problems. PLO9 – Individual and Team Work: Function effectively as an individual and as a member in diverse technical teams. PLO10 – Communication: Communicate effectively on well-defined engineering activities.
Engineering Software	Application of CAD, CAM, design and analysis.	PLO5 – Modern Tool Usage: Apply appropriate techniques, resources, and modern engineering tools. PLO12 – Life-long Learning: Recognize the need for, and engage in independent and life-long learning.
Field Visits / Benchmarking	Visits to industries/plants/exhibitions for exposure to real-world applications.	PO11 – Project Management and Finance: Demonstrate knowledge of engineering management principles and apply them to one's own work. PO12 – Life-long Learning: Recognize the need for, and engage in independent and life-long learning.

C3-9. Discuss Design Projects (DP) and/or Final Projects (FP), and how it is mapped to PO.

The Final Year Project (FYP) serves as a capstone experience that integrates knowledge, skills, and attitudes acquired throughout the programme. It provides students with the opportunity to demonstrate their ability to solve engineering problems, apply project management principles, and communicate effectively in both written and oral forms. The CLOs for the FYP are systematically mapped to the Programme Learning Outcomes (PLOs) to ensure constructive alignment with the programme objectives.

Through activities such as practical project work, discussions, presentations, and report writing, students are exposed to real engineering practices that develop creativity, critical thinking, teamwork, and professionalism. Assessment methods including logbooks, presentations, and project reports are employed to evaluate the achievement of CLOs, thus ensuring that the FYP contributes significantly to the attainment of PLOs and prepares students for professional practice or further studies. Table below shows the mapping of programme learning outcomes and assessment methods in Final Year Projects.

Course Learning Outcomes (CLO)			Programme Learning Outcomes (PLO)											Proposed Teaching & Learning Activities	Assessment Methods
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11		
CLO1	Organize project outcomes in progress report based on standard format	(P4 , PLO 10)										/		Project Activities	Log Book
CLO2	Construct design solutions to meet specified needs of the project with appropriate consideration	(P5 , PLO 3)			/									Project Activities	Practical Product
CLO3	Analyze the project results and write the project report to achieve proposed objectives	(C4 , PLO 4)				/								Disscussion	Project Report
CLO4	Explain the project work and defend project outcomes effectively with good communication skills	(A4 , PLO 9)									/			Disscussion	Presentation

Table C3-9a: Mapping of programme learning outcomes and assessment methods in Final Year Projects

C3-10. Discuss the extent to which the programme's various stakeholders are involved in the curriculum development and review process.

Stakeholders play a crucial role throughout the curriculum review and development process. Their feedback, drawn from diverse groups such as industry, alumni, academic experts, professional bodies, staff, students, and benchmarking partners, forms the foundation for curriculum enhancement. This input guides the Curriculum Development Committee in drafting and improving curriculum documents, ensuring that the content remains relevant, current, and responsive to industry needs. The revised drafts, shaped by stakeholder perspectives, are then verified and recommended by advisory and technical committees before being approved at higher levels. Once endorsed, the curriculum is formalized through official circulars and implemented across institutions. Updates are also shared with MQA and professional bodies to maintain compliance and recognition. This process reflects the extensive involvement of stakeholders at every stage, from initiating improvements to ensuring the successful delivery of a curriculum that meets both academic standards and industry expectations.

The diagram shows the flow of curriculum development and approval. Stakeholder feedback is collected, and the curriculum document is drafted and improved. It is then verified and reviewed by committees, followed by approval at higher levels. Once approved, circulars and guidelines are issued, equipment norms are updated, and information is shared with professional bodies. Finally, the curriculum is interpreted and implemented at the institutional level.

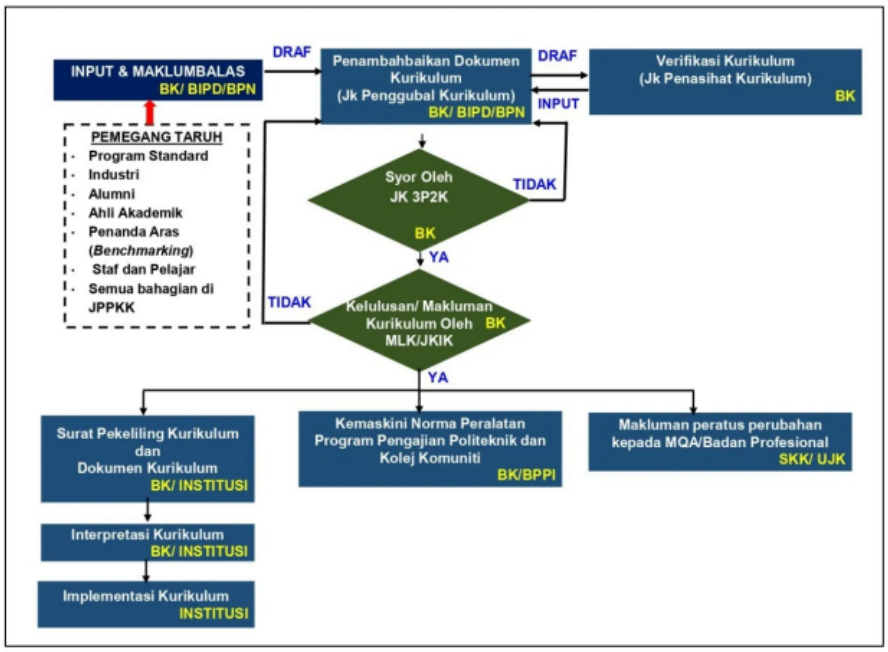

Figure C3-10a: Flow of curriculum development and approval

This table outlines the main stakeholders involved in curriculum development, their roles, and the related documents that support their contributions.

Table C3-10a: Main stakeholders' involvement in curriculum development

No.	Stakeholder	Description	Related Reports / Documents
1	Government / Quality Assurance Agencies	Provide funding and requirements for an educated population, and set policies and directions for higher education.	National Education Policy
2	Industry / Employers	Provide input on the latest developments in technology and industrial practices.	Industrial Advisory Committee (IAC) Report Minutes of Industrial Advisory Meetings
3	Academic Experts	Provide input on the latest technological developments and curriculum improvements.	Programme Advisory Meeting Minutes
4	Lecturers	Involved in both academic and administrative roles, with their professional lives influenced by the programme.	Curriculum Feedback System S3P Achievement Reporting System
5	Alumni	Provide input on technological developments and share past learning experiences.	Graduate Employability Survey PEO (Programme Educational Objectives) Survey
6	Current Students	Students who set aside other activities and potential income opportunities to pursue studies in the programme.	Student Performance Analysis Reports (CORR & PLORR)

C3-11. Discuss CQI strategies to be implemented in Academic Curriculum review

Continuous Quality Improvement (CQI) in academic curriculum review is an integral part of Outcome-Based Education (OBE) practices and a requirement by ETAC/MBOT to ensure that the curriculum remains relevant, effective, and aligned with the Programme Educational Objectives (PEOs), Programme Learning Outcomes (PLOs), and stakeholder expectations.

1. Stakeholder Feedback and Industry Engagement

Regular feedback is gathered from students, alumni, employers, and industry advisory panels (IAPs)* through exit surveys, tracer studies, and employer surveys. Industry representatives are invited to curriculum review meetings to evaluate the adequacy of programme content against current and future industry needs. Feedback is then documented and used as evidence for revising course outcomes, content, and delivery approaches.

2. Outcome-Based Education (OBE) Assessment

Analysis of Course Learning Outcomes achievement in Course Outcome Review Reports (CLORR) and Programme Learning Outcomes attainment is carried out at the end of every semester in Program Outcome Review Report (PLORR). Areas of weakness are identified and actions are proposed in the CQI section of course reports.

3. Curriculum Benchmarking

The programme curriculum is benchmarked against similar programmes at other universities, polytechnics, and international institutions. Benchmarking findings are reported during curriculum review sessions and used to justify curriculum updates.

4. Formal Curriculum Review Cycle

The programme undergoes formal curriculum review every 3–5 years in addition to annual monitoring via course file reviews. Findings from course reports, external examiners, industry panels, and accreditation exercises are consolidated into a CQI action plan.

The CQI strategies embedded in the curriculum review process ensure that the programme remains relevant, competitive, and responsive to industry and stakeholder needs. This systematic approach strengthens the quality of teaching, enhances student learning outcomes, and ensures continuous compliance accreditation requirements.

C4-1 Discuss the requirement and process for admission of students to the program.

A. Requirement for Admission

The implementation of the policies towards achieving the targeted enrollment is overseen by the Student Admission Division with the support of Student Affairs Department in the respective polytechnics.

Student admission for the DMP programme is carried out twice a year, in Session 1:2025/2026 and Session 2:2024/2025 respectively. Both intakes process is done using online application procedures. During the Session 1:2025/2026 intake, application is done through Centralised Admission Agency at the Ministry of Higher Education via the portal http://upu.mohe.gov.my while application for the Session 2:2024/2025 intake is opened via the Student Admission Division portal at http://ambilan.mypolycc.edu.my. Admission requirements and all information related to admission can be obtained from the student admission portal at http://ambilan.mypolycc.edu.my. Refer (**Appendix C4- 1a)**

B. Process for Admission

Student admission for the Diploma in Mechanical Engineering (Industrial Packaging) (DMP) programme is carried out twice a year, in Session 1:2025/2026 and Session 2:2024/2025 respectively. During the Session 1:2025/2026 intake, application is done through Centralised Admission Agency at the Ministry of Higher Education via the http://upu.mohe.gov.my. Application for the 2:2024/2025 intake is opened via the Student Admission Division portal at http://ambilan.mypolycc.edu.my. Both intakes are done using online application procedures. Admission requirements and all information related to admission can be obtained from the student admission portal at http://ambilan.mypolycc.edu.my . (**Appendix C4- 1b)**

Entry requirement (**Appendix C4-1c**) for admission to the Diploma in Mechanical Engineering (Industrial Packaging) (DMP) is as follows:

1. **Malaysian Certificate of Education (SPM) holders:**
    - Malaysian Citizen
    - Has PASSED SPM or its equivalent and meets the following minimum entry requirements:
        i. Pass in *Bahasa Melayu* (Malay Language)
        ii. Pass in English Language
        iii. Pass in *Sejarah* (History) - (SPM 2013 onwards)
        iv. THREE (3) credits for the following subjects in SPM
            - Mathematics or Additional Mathematics
            - ONE (1) subject from the Science/Technical/Vocational grouping of subjects
            - Any subjects not accounted for from (i, ii, iii, & iv)
            - Does not have any disability that will hinder practical work

2. **Polytechic Pre-Diploma holders:**
    - Has PASSED the Pre-Diploma Science Programme

3. **Polytechnic Certificate holders:**
    - Malaysian Citizen
    - Has PASSED SPM with :
        i. Pass in Bahasa Melayu
        ii. Pass in History (SPM 2013 onwards)
        iii. ONE (1) credit in any subject of SPM

    Has a Polytechnic Certificate in the following fields:
        - Sijil Politeknik Tahap 3, KKM
        - Sijil Kolej Komuniti Tahap 3, KKM
        - Sijil Institut Kemahiran Tinggi PERDA Tahap 3, KKM
        - Sijil Institut Kemahiran MARA Tahap 3, KKM
        - Sijil Kemahiran Malaysia Tahap 3

4. Lulusan APEL:

- Malaysian Citizen
- Has Pass APEL (Accreditation of Prior Experiential Learning) Certificate from MQA (Malaysian Qualifications) for Diploma (Tahap 4).

The admission procedures can be generalized into four major processes as shown in **Table C4-1a. Table C4-1b** shows the distribution of student enrolment for all academic years for the past three years for DMP and **Table C4-1c** show the entry qualification of final year students of the current year.

Table C4-1a: Admission Procedures

PROCESS	ACTIVITIES
APPLICATION	1. Applicants fill in on-line application forms using unique IDs. 2. Applicants print application slips for reference and verification.
SELECTION	Selection is done based on merit calculated from academic results and co-curricular activities participation, and is subject to the availability of places at the respective polytechnics.
OFFER & PLACEMENT	Approved applicants will need to indicate acceptance and send all supporting documents e.g. copies of certificates directly to the polytechnic for verification after which they can print their letter of admission and registration procedures.
APPEALS	Unsuccessful applicants can submit appeals on-line and all appeals will be considered based on the availability of places.

Table C4-1b: Distribution of Student Enrolment for All Academic Years for the Past Three Years for Diploma in Mechanical Engineering (Industrial Packaging) Programme

Year	Semester	Year				
		2025	2024		2023	
		I/2025-2026	I/2024-2025	II/2024-2025	I/2023-2024	II/2023-2024
1st Year	Sem 1	38	18	0	15	0
	Sem 2	0	0	17	1	15
2nd Year	Sem 3	17	14	0	22	0
	Sem 4	0	0	14	0	21
3rd Year	Sem 5	14	21	0	33	0
	Sem 6	1	3	22	15	32
Total Number of Students per Year		**70**	**56**	**53**	**86**	**68**

Table C4-1c : Entry Qualification of Final Year Students of the Current Year

Entry	Number
SPM	15
Certificate	-
Others (credit transfer, etc)	-

C4-2 Discuss the policies and processes for credit transfer/exemption.

C. Credit Transfer/Exemption Policies and Processes

Currently, the policies and processes for credit transfer and course exemption are outlined in the Guidelines for *Garis Panduan Pindahan Kredit & Pengecualian Kursus Program Pengajian Politeknik Edisi 2020* (Credit Transfer and Course Exemption for Polytechnic Programmes) edition 2020. Refer (**Appendix C4-2a)**

i. Credit Transfer

Credit Transfer is credit given to students who have taken the course in a previous programme in the same or different institution. There are two categories of credit transfer; horizontal and vertical. The horizontal credit transfer allows credit transfer from the same level of programme, e.g. diploma to diploma. The vertical credit transfer allows credit transfer from a lower level of programme to a higher level of programme, e.g. certificate to diploma.

The minimum requirements to be eligible for credit transfer are as follows:

- Minimum grade to be achieved for the consideration of credit transfer is C.
- The course must be equivalent or similar to 80% in content based on course and course comparison
- The course content does not exceed the equality of two courses when combined
- The courses are of the same credit value or equivalent or more to the new course in the programme.
- The course has been/is accredited by MQA.

The latest circular from the Department of Higher Education (DHE), dated 25 April 2016 has added to the credit transfer requirements, as follows:

- Allowing a maximum of 30% credit transfer for certificate holders (Level 3, MQF) to diploma holders (Level 4, MQF).
- Allowing credit transfer for students who have already obtained the qualification and wishes to continue studies for the second time at the same level.

Applications for overall grade transfer for students who transfer between polytechnics with the same program have been considered by MQA based on the stipulation that credits are counted in students' graduated credits and course grades are taken into account in the calculation of Grade Point Average (PNG) and Cumulative Grade Average (PNGK) at the same polytechnic is taken as a whole to the new polytechnic for the same program.

Notification has been made to all polytechnics through a letter Notification of Exchange of Polytechnic Students with the Same Program dated March 20, 2023. Refer (**Appendix C4-2b**)

ii. Course Exemption

Course Exemption is given based on the students' knowledge and skills from the previous learning or experience. Course exemption does not carry any credit value. The policy for course exemption is done on the following bases:

- The equality of course content is proven by students' knowledge and skills
- The course exemption does not allow students to obtain credit value
- Students will be required to take other courses to replace the credit hours exempted in order to fulfil the total credit hours to graduate.

There was an amendment done on the credit transfer requirement in a letter dated 19th August 2016 from DHE (**Appendix C4-2c** is referred), where the following requirements were added:

- Graded Credit Transfer: Horizontal credit transfers for students who are still in the programme. Credits will be accounted for in total graduating credit and will be calculated in their GPA (Grade Point Average) and CGPA (Cumulative Grade Point Average).
- Non Graded Credit Transfer/Credit Exemption: Both vertical and horizontal credit transfers for students who are not in the system (graduated students) and students who have achieved the competency level of the course. Credit transfer will not be reflected in their GPA and CGPA calculation but will be accounted for in total graduating credit.

Recently, there was an amendment done on the credit transfer requirement in a letter dated 30th January 2023 from JPPKK Refer (**Appendix C4-2d**), where the following requirements were added:

- Change of Mapping Form for Credit Transfer Guidelines and Exemption of Polytechnic and Community College Courses 2020 Edition.

C4-3 Discuss the counselling services available.

Counselling service

Unit Pengurusan Psikologi (UPP) provides various services aimed at student and staff psychological wellbeing and career development. The services include:

Table C4-3a : Service category provided by UPP

Service Category	Specific Functions
Personal / Emotional / Social Support	Helping students develop personal, social, spiritual strengths; supporting their mental health; helping them cope with personal or emotional issues.
Academic-Psychological Support	Interventions to help in academic performance: skills, study habits, motivation, overcoming academic-related stress or fears.
Career / Kerjaya Services	Career guidance / counselling: planning career paths, aligning student strengths (psychological) with career options.
Programs & Planning	Designing, implementing, evaluating & controlling psychology & career programs; developmental workshops etc.
Evaluation & Assessment	Psychological evaluation/assessments (possibly inventories, performance review etc.) as part of interventions.

Students at PSA can typically access the UPP through several channels. They may choose to walk in directly at the UPP, contact the counsellors via email or phone through the PSA administration, or schedule appointments using online portals and student service counters. These multiple access points ensure that counselling and support services are easily reachable and responsive to students' needs. Psychology and Counselling Services offered by UPP can be referred in **Appendix C4-3a**

At PSA, there are three counsellors available who can be approached directly by students for guidance, support, and counselling services. They provide assistance in areas such as academic stress, personal wellbeing, motivation, and time management, while also conducting awareness programmes and workshops to promote positive mental health among students. (**Appendix C4-3b**)

Other than that, there were also Rakan Pembimbing Perkhidmatan Awam / Public Service Peer Guidance (AKRAB) in PSA. **(Appendix C4-3c)** AKRAB stands for *Amanah, Komitmen, Rasional, Akhlak, Bestari*. It is a formal program of peer mentoring / peer guidance in the Malaysian public service. AKRAB is essentially a rebranding of earlier names like *Rakan Pembimbing*, *Pembimbing Rakan Sekerja*, *Pegawai Khidmat Kaunseling*, etc.

The objectives & purpose of AKRAB are :

- To provide guidance and mentoring among public servants to help improve potential, performance, and well-being.
- To serve as an intermediary support between employees and HR or psychological services for issues in the workplace.
- To help those facing challenges (personal or professional), including performance issues, stress, interpersonal problems, adapting to changes, etc.

C4-4 Discuss formal or informal feedback platform/channel to obtain student feedback for programme improvement, and how the feedback has been considered

At PSA, student feedback is gathered through both formal and informal platforms, each playing a vital role in programme quality assurance, curriculum relevance, and continuous improvement.

D. Formal or informal Feedback Platforms

Table C4-4a : Formal Feedback Platforms

Platform / Channel	Issue / Feedback Identified	Action Taken	Result / Improvement
Course & Teaching Evaluation	Some students reported less engaging teaching methods and unclear course delivery.	Results analysed by Head of Programme : lecturers sent for OBE and digital teaching training.	Improved teaching approaches, more interactive delivery, and higher Course & Teaching Evaluation scores.
Tracer Study *(Kajian Pengesanan Graduan)*	Graduates indicated a need for stronger soft skills and industry-relevant competencies.	Curriculum review added generic skills modules, group projects, and industrial input.	Better alignment of programmes with industry needs : improved employability rates.
Customer Complaint Box *(Peti Aduan Pelanggan)*	Students requested upgrades in ICT and sports facilities, and better counselling access.	PSA allocated funds for ICT and sports facility upgrades; strengthened UPP counselling services.	Enhanced campus environment, facilities, and student wellbeing.

Table C4-4b : Informal Feedback Platforms

Platform / Channel	Description	How Feedback is Considered
Class Representative Meetings *(Jawatankuasa Perwakilan Pelajar(JPP) /Perwakilan Pelajar Jabatan (JPP))*	Class reps act as intermediaries between students and the administration, raising issues like workload, facilities, or timetabling.	Feedback is discussed in departmental meetings. If the concern affects multiple programmes, it is escalated to higher management for systemic action.
MyJKM Student Info System *(MYJKM Info Pelajar)*	A centralised platform where student information such as academic progress, attendance, financial aid, and disciplinary records are stored and monitored.	Data analysed by academic and student affairs units : interventions planned (academic support, counselling, financial aid adjustments) to improve student performance and wellbeing.
Lecturer–Student Informal Dialogue	Students raise immediate academic concerns directly with lecturers during or after class.	Lecturers can make short-term adjustments (e.g., assignment deadlines, teaching methods) or channel feedback to the Programme Coordinator for longer-term improvements.
Student Affairs / Counselling Unit (UPP)	Students share academic and non-academic challenges in counselling sessions.	Counsellors identify recurring themes (e.g., stress, workload) and provide anonymised reports to management, informing decisions on support programmes or workload adjustments.
Social Media / WhatsApp / Telegram Groups	Departments and lecturers maintain group chats where students give spontaneous feedback (e.g., faulty equipment, scheduling).	Although informal, issues are often resolved quickly (e.g., lab repairs, class rescheduling), making this a fast-response feedback channel.

PSA uses a dual system of formal platforms (online evaluations, surveys, tracer studies, academic advising) and informal platforms (student reps, counselling, class dialogues, social media). Feedback is systematically channelled to programme committees, departments, and management. The feedback has led to curriculum adjustments, improved facilities, staff training, academic support, and wellbeing initiatives — ensuring continuous improvement and student-centred education.

At PSA, several Continuous Quality Improvement (CQI) initiatives have been implemented in response to data gathered from surveys, evaluations, and advisory systems.

Curriculum alignment was strengthened when feedback from graduate tracer studies revealed that employers valued stronger soft skills. As a result, PSA introduced generic skills modules and increased the use of group project-based learning to enhance teamwork, communication, and problem-solving abilities.

In terms of facilities upgrade, student satisfaction surveys highlighted the need to improve sports facilities

at PSA. PSA responded by allocating funds to upgrade the sports infrastructure, ensuring that students have access to safer, more modern, and well-equipped facilities that support both co-curricular activities and overall wellbeing. (**Appendix C4-4a**)

Regarding teaching methods, course evaluations showed that students preferred more interactive learning approaches. To address this, lecturers were provided with professional training in Outcome-Based Education (OBE) and digital teaching methods, enabling them to deliver more engaging and effective lessons. (**Appendix C4-4b**)

Finally, in the area of student wellbeing, counselling records from the Unit Psikologi dan Kaunseling (UPP) showed that stress related to workload was a recurring issue. PSA took proactive steps by organising awareness programmes on time management and stress control, aimed at promoting healthier study habits and better mental resilience.

Through these measures, PSA demonstrates its commitment to continuous improvement by responding systematically to feedback and ensuring that curriculum, teaching, facilities, academic support, and wellbeing services evolve to meet student and industry needs.

By combining these formal and informal platforms, PSA ensures that student voices are consistently heard and acted upon. Formal channels contribute to long-term strategic reviews and quality assurance, while informal channels allow for agile day-to-day problem solving. Together, they form a comprehensive Continuous Quality Improvement (CQI) system that supports student success, enhances curriculum relevance, and strengthens the overall learning environment.

C4-5 Discuss students' workload.

E. Students Workload

The DMP curriculum structure has been designed to ensure that the student's workload is appropriate. The Head of Programme will ensure through the Course Coordinators that the assessments are scheduled and conducted accordingly to the course outline. The course outlines are circulated to students within the first or second week of each semester. The course outlines will help the students to manage their study schedules and prepare for the scheduled assessments.

As for Course Registration, according to *Buku Arahan Peperiksaan & Kaedah Penilaian Politeknik dan Kolej Komuniti Edisi Pertama 2025 (Examination Instructions and Evaluation Methods Polytechnics and Community Colleges First Edition 2025)* published by the Department of Evaluation & Examination (Refer **Appendix C4-5a**), students are advised to register between 12 credit hours to 20 credit hours per semester or as stated in Programme Structure for DMP.

1. Students are allowed to register **below 12 credit hours per semester** if they fulfill the following requirements:
    - Permitted by Academic Advisor
    - Approved by Head of Department
    - Fulfill one of the following:
        i. Final semester student
        ii. Short semester student
        iii. Part time student
        iv. Students who obtained Restricted Results (KS) status for the previous semester examination.
2. Students are allowed to register **more than 20 credit hours per semester** if they fulfill the following requirements:
    - Permitted by Academic Advisor
    - Approved by Head of Department
    - Fulfill one of the following:
        i. Final semester students
        ii. Passed all courses from previous semesters
        iii. Obtained a CGPA of more than 3.00 in the previous semester

Based on the programme structure, for the hours the students need to spend in the class and laboratories as well as the expected number of their own self-study and working hours outside the class, it has been decided that the reasonable credit hours is 18 per semester. In general, for every credit hour registered, students are expected to spend 40 hours of learning time for a subject matter. This includes all the formal and informal lectures, assignments, tutorials, projects, self-study, examination preparation, and other

activities related to the course.

For example, a three credit hour course will require 120 hours of Student Learning Time (SLT) meanwhile for a two credit hour course will require 80 hours of Student Learning Time. **Appendix C4-5b** shows an example of the SLT calculation.

Typically, a student goes through five academic semesters and one semester of industrial training to complete a diploma programme. Every semester the number hours is maintained not more than 18 hours. Table C4-4a shows the summary of the DMP students' workload per semester.

Table C4-5a: Summary of Credit Hour Breakdown by Semester for DMP Programme

Semester	**Credit Hour**					
	Compulsory	Common Core	Discipline Core	Specialization	Elective	Total
DMP 1	3	7	8	-	-	18
DMP 2	3	3	11	-	-	17
DMP 3	2	3	13	-	-	18
DMP 4	-	2	13	-	1	16
DMP 5	6	-	8	-	1	15
DMP 6	INDUSTRIAL TRAINING					10
Total Credit Hour						94

C4-6 Discuss student activities and involvement in student organizations that provide experience in management and governance, representation in education and related matters and social activities.

F. Student Activities and Involvement in Student Organizations

Students are encouraged to join clubs or organisation while studying at the polytechnic. Being actively involved in extracurricular activities will offer the students an opportunity to experience the management and social skills. Such organisations will organize functions, conduct elections to select administrators, meetings and discussions to help the society to bring benefits to the students.

There are many student activities provided and organised either at the polytechnic or at department level during the period of study at PSA.

In order to encourage the participation of students in curriculum development, teaching and learning, student welfare and various other activities, the following methods are used:

- Motivating students to participate at inter polytechnic or higher level activities by providing resources e.g. training grounds, coaches
- Leadership courses and financial support
- Sport events
- Open day
- Appreciating students' involvement through certificates of appreciation

There are many avenues for students to make contribution to curriculum and other relevant matters to them such as:

i. Polytechnic Student Representative Committee (JPP)

The JPP was formed with the objectives to create good student leaders, maximise the use of student facilities, plan and conduct various student-centered activities, promote multiracial participation in activities, and as mediator between students and upper management. JPP is represented by the students for the students. An annual student election is conducted to fill the posts offered in the MPP (**Appendix C4-6a**). There are various executive committees that help to address student's life issues and rights on campus. The activities managed and conducted by the committee range from organizing social corporate responsibility activities, student welfare and social activities. The activities conducted by the JPP benefits students either academically or for personal development (**Appendix C4-6b**).

ii. Mechanical Engineering Department Student Representative Council (PPJ JKM)

The establishment of PPJ JKM (Mechanical Engineering Department) (**Appendix C4-6c**) aims to nurture capable, responsible, and ethical student leaders while ensuring the effective utilisation of facilities and resources provided for Mechanical Engineering students. It strives to plan and organise student-centred programmes that emphasise academic excellence, innovation, and skills development. At the same time, it promotes inclusivity and unity by encouraging participation from all students regardless of background. PPJ JKM also serves as a bridge between students and the faculty or management, safeguarding and

representing their welfare, rights, and concerns. Furthermore, it is committed to conducting activities that contribute to students' academic success, professional growth, and personal development. The activities conducted by PPJ JKM listed in **Appendix C4-6d.**

iii.Peer Facilitator (PRS)

PRS in PSA was initiated by the Psychology and Carrier Unit with the cooperation of Student Affairs Department. The intention of this organisation is to produce students as peer facilitators as well as conduct psycho- educational programmes such as self-development, motivation and career development. The organisational charts are shown in **Appendix C4-6e.** The activities conducted by Psychology and Carrier Unit listed in **Appendix C4-6f.**

iv. Mechtech Club

All the activities are planned according to the needs of the programme outcomes so students will have a comprehensive learning experience in and out of the classroom. Among the activities organised by Mechtech Club (**Appendix C4-6g**) are Academic/Industrial Visits, Community Social Responsibility, Engineering knowledge based competition and Social and recreational activities (**Appendix C4-6h).**

iii. Friends of Islamic Centre (RAPI)

RAPI is under the patronage of PSA Islamic Centre. The objective of this organization is help build and strengthen the personality of Muslim students by empowering their religious knowledge. Community based activities are conducted to enrich students' communication skills with the society as well as their management skills. (**Appendix C4-6i & Appendix C4-6j)**

iv) Residential College Student Committee (JPKK)

JPKK is a committee established to look after the welfare of residential college residents which is Aman, Damai & Sentosa. (**Appendix C4-6k**) Among the activities organized by JPKK (**Appendix C4-6l**) are registration for residential college, introduction to residential college and community social responsibility.

C4-7 Discuss student performances in relation to PO from overall holistic perspective involving both curricular and cocurricular activities, such as participation in competitions, public speaking, sports and cultural activities, etc

G. Students' Performance in Relation to Programme Learning Outcomes

Students' performance in relation to the Programme Learning Outcomes is assessed based on:

Academic Assessment

These assessments require students to demonstrate knowledge and skills that are measured in order to obtain the expected outcomes. The assessments include the following:

- **Coursework Assessment** - Coursework is conducted to broadly test the students' retention and ability to use prerequisite materials. Coursework grades are based on performance on tests, quizzes, assignments, tutorials and projects. These items are an important standard evaluation component. All coursework assessments are designed based on appropriate cognitive domains and levels of taxonomy provided by the course syllabus.
- **Laboratory Work** - Students participate in laboratory experiments and derive the data required. They then proceed to tabulate and analyze the data obtained. Finally, they prepare laboratory reports as required. The laboratory work is designed based on appropriate cognitive domains and levels of taxonomy provided by the course syllabus.

- **Final Year Project** - Currently, the processes for the Engineering Final Year Project are outlined in the Guidebook for Buku *Panduan Pelaksanaan Projek Pelajar Politeknik Edisi 2021* (Guidebook for Student Project Review) edition 2021 (**Appendix C4-7a**). For the Engineering Final Year Project, every student will have a project topic and supervised by a lecturer. The student has to produce a complete project report and presentations to be evaluated by the internal and external review teams. The guidebook is in effect starting December 2020 session, as instructed in a letter circulated on 30 March 2021 (**Appendix C4-7b**)

- **Final examination** - Final examinations are conducted at the end of each semester.

Non Academic Activities

Non Academic Activities are basically co-curricular activities to benefit the development of student personality and provides a platform for students to express their diverse interest, talents, skills and their creativity. There are graded and non-graded co-curricular activities. **Appendix C4-7c** shows the tabulation of Graded Co-Curricular Paths

1. Graded co-curricular activities **-** Students are given the option to choose one of the two paths offered in graded co-curricular activities. There are two paths to choose from; Path 1 and Path 2.

- Path 1 (Uniformed units): Students who are interested in this path are required to join Level 1 during the semester one. They will proceed to Level 2 during semester 2. This path only carries one (1) credit value for Levels 1 and 2.
- Path 2 (Clubs): Students who are interested in this path are required to join one (1) sport club during the semester one and one (1) club during semester 2.

2. Non-graded co-curricular activities - Students are given opportunities to express their talents and skills in various sporting events as well as non-sporting events. The list of student's achievements in sport events that have been conducted for the year of 2024 - 2025 is shown in **Appendix C4-7d** while student achievements in other co-curricular areas are stated in **Appendix C4-7e**.

As for Academic Advisory System, according to *Buku Panduan Sistem Penasihatan Akademik (SPAk) Edisi 2022* (Academic Advisory System Guidebook, 2022 Edition), published by Department of Education - Instructional and Digital Learning Section, all students are assigned to an academic advisor. The academic advisor will monitor student performance throughout their studies. Weekly meetings are conducted between the students and the academic advisor to discuss the students' performance and well-being. Refer (**Appendix C4-7f).**

In addition, students with other problems such as social, spiritual and emotional problems are referred to the counselor. Counselors are available to offer counseling and psychological services either through walk-in appointments, pre-dated appointments or invitation from the counselor. All of the students' data and records are kept private and confidential by the counselors.

Intervention programmes were conducted to boost the morale of the students, to motivate the students, inculcate self-directed learning and to nurture lifelong learning among these students. Programmes such as 'Psychometric Test" have been conducted in collaboration between the Psychology and Counseling Unit and Academic Advisory System to motivate the students on their studies. These programs offer opportunities for students to develop personal autonomy, positive self-perceptions, leadership skills, social responsibility, and a heightened community consciousness of and appreciation for sameness and difference.

For financial help, students are referred to the Student Affairs Department for financial loans. Refer (**Appendix C4-7g)**

C4-8 Discuss CQI strategies to be implemented in relation to student performance.

H. CQI strategies

Continuous Quality Improvement (CQI) at PSA is implemented through a continuous cycle that includes data monitoring, academic interventions, curriculum enhancement, lecturer development, student support, and systematic feedback review.

In terms of **data collection and monitoring**, course assessment analyses are carried out regularly, covering assignments, examinations, projects, and practical work to identify weaknesses in learning outcomes (LOs). In addition, assessment committee or examination board meetings are held to review grade distributions, failure rates, and overall performance patterns. An early alert system is also applied to monitor attendance, GPA, and continuous assessment results in order to identify at-risk students as early as possible.

For **academic support interventions**, remedial and bridging classes are offered in core courses with high failure rates such as Strength of Material & Electrical & Electronic Technology. Peer tutoring and mentoring programmes are also introduced, where senior or high-achieving students guide their juniors. Learning skills workshops are conducted to cover areas such as study strategies, time management, and examination techniques. Furthermore, the *Sistem Penasihatan Akademik* (SPAk) ensures students are monitored through regular academic advising sessions that also address personal challenges.

With regard to **curriculum and teaching enhancement**, Outcome-Based Education (OBE) alignment and review is carried out by mapping Course Learning Outcomes (CLOs) to Programme Outcomes (POs) and adjusting teaching strategies where CLO attainment is weak. Lecturers are encouraged to adopt innovative pedagogies such as flipped classrooms, project-based learning, and problem-based learning (PBL), while integrating digital tools including learning management systems (LMS), simulations, and e-learning platforms. The curriculum is also made industry-relevant through real-world projects, industrial training, and employer feedback.

In **lecturer development**, continuous professional training is provided in areas such as OBE, assessment strategies, and digital pedagogy. Peer observation and sharing sessions allow lecturers to reflect on and exchange best practices. New lecturers are also supported through mentoring programmes with guidance from experienced staff.

For **student wellbeing and motivation**, psychological support is made available through the Unit Psikologi dan Kaunseling (UPP), assisting students in managing stress, motivation, and personal issues that may affect performance. Co-curricular and leadership activities are organised to strengthen soft skills, teamwork, and confidence. Recognition and rewards such as *Anugerah Ketua Jabatan*, scholarships, and certificates are also offered to encourage academic excellence.

Finally, **continuous review** is conducted through both formal and informal student feedback, including course evaluations, surveys, and class representative meetings. Feedback from employers and alumni is also

gathered through graduate tracer studies and industry advisory panels. All CQI actions are documented in programme CQI reports, capturing issues identified, corrective actions taken, and measurable improvements achieved.

In conclusion, CQI at PSA is implemented holistically through an ongoing cycle of performance monitoring, academic and personal support, curriculum and teaching enhancement, lecturer development, and structured feedback mechanisms. These efforts ensure effective teaching, stronger learning outcomes, industry-aligned programmes, and graduates of high quality.

C5-1 Discuss the strength and competencies of the teaching staff in covering all areas of the programme and in implementing the outcome-based approach to education.

A. Strength and Competencies of Academic Staff

DMP programme is supported by 11 competent teaching staff with an average of ten years of teaching experience in the engineering field. They consist of 3 of them are PhD holders, 7 are Master's Degree holders, 4 are Bachelor's Degree holders. **Table C5-1a** shows the breakdown in terms of the number of teaching staff (full-time programme) for the past three years. The results from the calculation show that the teaching staff of the programme is capable of accommodating student-staff interaction, advising and counseling, service activities, professional development, and interaction with practitioners and employers. **Appendix C5-1a** shows the table of competency matrix of the DMP programme teaching staff. It shows the distribution of the courses which are offered by the programme to the DKM teaching staff to ensure that they cover all areas of the programme.

OBE is an approach practiced by the teaching staff which includes teaching and learning sessions, and assessments (end of chapters, quizzes, tests, presentations, practical works, etc.). They are always encouraged to attend programs, courses, talks and workshops to enhance their knowledge of the approach.

Table C5-1a: Breakdown in Terms of Number of Academic Staff (Fulltime and Inter-programme) by Session for All Academic Years for the Past Three Years

Academic Staff	Year					
	2022		2023		2024	
	I	II	I	II	I	II
(a) Total number of full-time staff (including those serving other programmes and staff on study leave)	14	14	14	14	12	12
(b) Full-time equivalent of teaching staff servicing other programmes	5	9	10	10	9	9
(c) Teaching staff (on study leave)	-	-	-	-	-	-
(d) Tutor	-	-	-	-	-	-
(e) Effective full-time academic staff = (a) – (b) – (c) – (d)	9	3	4	4	3	3
(f) Full-time equivalent of academic staff from other programmes servicing this programme	11	8	8	8	8	8
(g) Full-time equivalent of part time teaching staff	-	-	-	-	-	-
Full-time Equivalent Academic Staff (FTES) Contributing to Staff:Student Ratio = (e)+(f)+(g)	20	11	12	12	11	11

B. Summary of qualification, industrial experience and development

The staff of the DMP programme possess relevant qualifications, industrial experiences and development in their career. **Table C5-1b** and **Appendix C5-1b** illustrate the names of the full-time staff with their areas of specialization. The table clearly shows that there is a good and adequate blend of academic staff in terms of individual traits to ensure the smooth running of the programme. All the details of each teaching staff can be referred from their Curriculum Vitae (CV).

Table C5-1b: Analysis of All Teaching Staff

ANALYSIS OF ALL TEACHING STAFF (DMP)

No	Name	Post Held	Date of First Appointment at the Fac/Sch/ Dept.	Part or Full Time or from other Programmes	Academic Qualifications/ Field of Specialization/ Institution and Year of Award	Professional Qualifications	Membership in Professional Bodies	Years of Experience		Level of Activity (high, medium, low, none)				
								Industrial	Teaching	**High**	**Med**	**Low**	**None**	

										Professional Society (indicate society)	Research	Consulting (Industry)	Publications	Administration
MECHANICAL ENGINEERING DEPARTMENT														
1	Ts. MUHAMMAD HANIF BIN SELAMAT	Head Of Programme	4/8/2015	Full Time	Bachelor in Engineering Teknologi in Manufacturing Systems (Hons) Unikl , Diploma in Mechanical Engineering (Packaging) Politeknik Sultan Salahuddin Abdul Aziz Shah	SKM Tahap 2 - Pengendalian Dron-2022 , Power Point Professional, Professional Technologist (MBoT)	BEM, Professional Technologist (MBOT)	Mercury Paint Sdn Bhd,SMK Tools Sdn Bhd, ZTA Scientifik Sdn Bhd	10					

2	TS. DR. MOHD ELIAS BIN DAUD	Senior Lecturer	1/8/1999	Full time	-PhD Mechanical Engineering, UTHM '2014. -Sarjana Pendidikan Teknikal, UTM ,1999. -Sarjana Muda Sains Kej. Mekanikal (Elektromekanikal), UTM, 1997.	- Sijil Profesional Basic of Pneumatics / Electro Pneumatics (2023). -SIJIL KEMAHIRAN MALAYSIA (AUTOMASI INDUSTRI Level 3) - Certified KNX Partner (Basic, Advanced, Tutor) , International certification (2023) - Profesional Certificate in System Integration (2021) (European International Universiti).	- BEM - Professional Technologist (Ts) (2016)	MALAYSIAN AIRLINES SYSTEM	24 yrs					
3	SOM CHAI A/L ENOI	Senior Lecturer	16/8/2006	Full time	Sarjana Pendidikan Teknik dan Vokasional, 2004	Sijil Profesional Basic of Pneumatics / Electro -pneumatics (2023), Professional Technologist (2022)	BEM, MBOT		17 yrs					
4	NOOR HAZNIDA BINTI BAKAR	Senior Lecturer	1/4/2002	Full time	Sarjana Pendidikan Teknik, UTM '2002, Ijazah Sarjana Muda Kepujian Kejuruteraan	Microsoft Office Specialist EXCEL 2019 Associate.	BEM		21 yrs					

					Mekanikal, UiTM '2000									
5	ISNURAINI BINTI KASSIM	Senior Lecturer	17/6/2002	Full time	Ijazah Kejureteraan Mekanikal, UPM '1998; Sarjana Kejuruteraan Sistem Pembuatan, UPM '2009	SIJIL KEMAHIRAN MALAYSIA - Pemesinan Level 3	BEM	Northcons Enterprise Sdn Bhd	21 yrs					
6	BRYAN HEE TZE KEON	Senior Lecturer	1/7/1997	Full time	Sarjana Pendidikan, UTM '1997; Bsc(Hons) Computer Aided Product Design, Wolverhampton University, UK '95	Sijil Autodesk Inventor Certified Professional (2010, 2012, 2016) & Sijil Autodesk AutoCAD Certified Profesional (2000,2004,2005,2007,2010, 2011, 2012), SIJIL KEMAHIRAN MALAYSIA - Pelukisan Pelan Mekanikal Level 3, DIPLOMA KEMAHIRAN MALAYSIA - Pengajaran TVET Level 4	BEM	BF Resistors (M) Sdn Bhd, Jelapang Ipoh Carsem Seminconductor (M) Bhd Jelapang, Ipoh	26 yrs					

7	NGAI CHOOI HOONG	Senior Lecturer	1/8/1999	Full time	M Education, UTM '1999; Bsc (Hons) Mekanikal Engineering, UTM '1998		BEM		24 yrs					
8	NUR FARAH AIZAN BT IDRIS	Senior Lecturer	1/12/2008	Full time	Sarjana Pendidikan Teknik; Vokasional, UTHM '2008; Sarjana Muda Kejuruteraan (Mekanikal), KUiTTHO '2006	SIJIL PROFESIONAL BASIC OF PNEUMATICS / ELECTRO - PNEUMATICS	BEM		15 yrs					
9	NORSA AIDAH BT SAAID	Senior Lecturer	15/1/2009	Full time	Sarjana Muda Sains (kepujian) Teknologi Tekstil, UTiM '2017		BEM	AEON.CO	12 yrs					
10	SKH MUHA MMAD	Senior Lecturer	1/3/2010	Full time	Ijazah Sarjana Muda Kejuruteraan Pembuatan (Rekabentuk Pembuatan) Dengan Kepujian	Sijil Kemahiran Malaysia: Operasi Pemesinan Tahap 3, Professional Certificate Basic Of Pneumatic, Microsoft Office Specialist EXCEL 2019 Associate.	-	-	13 yrs					

11	MOHD ZULKARNAEN BIN MOHD IBRAHIM	Senior Lecturer	1/8/2000	Full time	Ijazah Sarjana Muda Pendidikan (Kejuruteraan Mekanikal), OUM '2008 Diploma Kejuruteraan Mekanikal Dengan Pendidikan, UTM 2000		BEM	Royal Selangor	23 yrs					
12	ROSLAN BIN KAMARUDIN	Senior Lecturer	2/1/1999	Full time	Ijazah Sarjana Muda Pendidikan (Kejuruteraan Mekanikal), OUM '2008Diploma Kejuruteraan Mekanikal Dengan Pendidikan, UTM 1998	Basic Occupational First Aid, SIJIL CIDB MALAYSIA - CONSTRUCTION SITE SUPERVISOR (MECHANICAL WORKS) (LEVEL 4)	BEM	Matsushita MCM	27 yrs					

This report provides a general overview of the academic staff under the Mechanical Engineering Department (DMP) based on the submitted analysis file. The primary focus of this summary is to highlight the distribution of academic qualifications, professional certifications, memberships in professional bodies, and the recorded levels of professional activity. A total of 12 academic staff members are listed. Based on the data:1 staff member holds a PhD, 10 staff members have a Master's degree, and 8 staff members possess a Bachelor's degree. This indicates that approximately 91.7% of staff have postgraduate qualifications, reflecting a solid academic foundation across the department. In terms of professional certifications: 9 staff members (about 75%) have listed professional qualifications such as SKM, DKM, or equivalent. 12 staff members are members of professional bodies, notably BEM (Board of Engineers Malaysia) and MBOT (Malaysia Board of Technologists), further indicating active professional engagement. As for the level of professional activity: 1 staff members are classified as having Medium activity 11 staff members are classified as having Low activity This distribution reveals a need to encourage broader involvement in professional or scholarly activities such as research, consultation, and publication. Staff with high or medium levels of activity serve as a strong foundation for mentorship and departmental excellence. Strategic incentives and development programs may further boost the department's collective professional contribution. In conclusion, the DMP department demonstrates a commendable level of academic and professional readiness. However, there remains potential to elevate engagement levels, thereby aligning more closely with the institution's mission for excellence in both academia and industry collaboration.

In addition, **Table C5-1c** shows the summary of the highest academic qualifications of the teaching staff of DMP programme. Meanwhile, the list of Membership in Professional Bodies of Academic Staff is shown in **Table C5-1d**.

Table C5-1c: Academic Qualification of Teaching Staff

Academic Qualifications	Year		
	2023	2024	2025
PhD	1	2	1
Master's Degree	9	8	6
Bachelor's Degree	3	4	5
TOTAL	**13**	**14**	**12**

Table C5-1d: Membership in Professional Bodies of Academic Staff

Type of Qualification/Field	Number
BEM	12
Name	**No.Reg**
BRYAN HEE TZE KEON	W19710
ISNURAINI BINTI KASSIM @ ISMAIL	30404A
MOHD ELIAS BIN DAUD	63567A
MOHD ZULKARNAEN BIN MOHD IBRAHIM	G1257728L
MUHAMMAD HANIF BIN SELAMAT	T14188
NGAI CHOOI HOONG	41614R
NOOR HAZNIDA BINTI BAKAR	G1219902A
NORSAAIDAH BT SAAID	W11339n(L)
NUR FARAHAIZAN BINTI IDRIS	72501A
ROSLAN BIN KAMARUDIN	G1258640L
SKH MUHAMMAD BIN SKH ABD RAHIM	G1235000A
SOM CHAI A/L ENOI	137314A

The academic posts held by the teaching staff are shown in **Table C5-1e**. Meanwhile, the total number of teaching staff certified with the industries is listed in **Appendix C5-1c.**

Table C5-1e: Posts held by Teaching Staff

No	Post		Number	
			Full Time	Part Time
1	Head of Programme	PPPT DH44	1	-
2	Senior lecturer	PPPT DH52	5	-
3	Senior lecturer	PPPT DH48	6	
3	Lecturer	PPPT DH44 PPPT DH41/42	-	-
4	Lecturer	PPPT DH 32	-	
		Total	**12**	

C5-2 Discuss how the overall staff workload enables effective teaching, student-staff interaction, student advising and counseling, IHL service and research activities, professional development and interaction with industry.

C. Teaching load/contact hours

In general, the teaching staff of the programme teaches courses and practical work. The minimum contact hours for each staff is less than 16 hours per week except for the staff that was not involved in the final exam course. To ensure the effectiveness of their teaching and learning process, each staff is responsible for teaching not more than three different theory courses in a particular semester. The teaching staff workload of the current semester session I 2023/2024 is shown in **Appendix C5-2a**. Besides teaching, the staff are also obligated to do other responsibilities as instructed by the HOD or HOP. **Table C5-2a** shows the average distribution of the teaching load and other responsibilities of the staff per week.

Table C5-2a: The Distribution of Workload and Other Responsibilities of DMP Teaching Staff Per Week

No	Distribution of Workload	Hours	Percentage (%)
1.	Teaching and learning	18 hrs.	47
2.	Academic advisor and student meeting	1 hr.	3
3.	Preparation of teaching and learning /interaction between industry	6 hrs.	16
	Professionalism Upgrading	3 hrs	7
4.	Student Evaluation	6 hrs.	16
5.	Research and development	2.5 hrs.	6
6.	IHL services	2 hrs.	5
	TOTAL	**38.5 hrs / week**	**100%**

D. Teaching Staff: Student ratio

The average ratio of the teaching staff to students for the DMP programme is 1:7 . It shows that the programme has sufficient teaching staff to conduct the programme effectively. **Table C5-2b** shows the ratio of staff to students for the past four years. **Table C5-2b(i)** shows academic staff from other programmes servicing the DMP programme.

Table C5-2b: Staff-Student Ratio

Year		Year				
		2023		2024		2025
SEMESTER		I	II	I	II	I
1st Year	Semester 1	24	0	18	0	38
	Semester 2	0	22	0	17	0
	Semester 3	33	0	14	0	17

2nd Year	**Semester 4**	16	33	0	14	0
3rd Year	**Semester 5**	15	16	21	0	14
	Semester 6	13	14	3	22	1
Total No. of Students per Session [A]		101	85	56	53	70
FTES [B]		12	12	12	12	11
ACADEMIC STAFF: STUDENT RATIO [B:A]		**1:08**	**1:07**	**1:05**	**1:04**	**1:06**

Calculation ratio:

Total No. of Students Per Session = **[A]**
Full-time Equivalent Academic Staff (FTES) = **[B]**
Academic Staff: Student Ratio = [B] / [A]

E.Research/publication/consultancy

The Commercialization, Research & Innovation (CRI) Unit at PSA is dedicated to fostering a culture of research and innovation among its teaching staff. It oversees all research, publications, and consultancy efforts, actively encouraging staff to present their findings at seminars and colloquiums, both locally and internationally. The CRI Unit provides crucial support by helping staff secure government-funded grants, such as the PPRN and Trans-Tech 4TVET grants, which are aimed at promoting innovation within Malaysia. Additionally, the unit organizes its own events to offer broader exposure and encourage active participation in research and academic publications.

The organization, specifically DMP, strongly supports its staff's professional growth and career development. Participation in activities such as paper presentations, research projects, and community engagement is highly valued and directly contributes to a staff member's annual performance evaluation and eligibility for promotion. Financial support for these activities is evident in the awarded grants: RM81,000 in 2023 from MOSTI and KPT, and a significant RM185,990 in 2025 awarded to JKM staff from the Trans-Tech TVET grant, highlighting a consistent commitment to funding and advancing research initiatives.

F. Industrial Involvement

The staff are provided with the opportunity to establish active and close rapport with the industry in various disciplines. In addition, external qualified speakers are also invited from industries/ public bodies to deliver lectures on experience/ engineering ethics/ professionalism for the students and academic staff. The information about the speakers and their presentations can be referred to **Appendix C5-2c**. The Diploma in Mechanical Engineering program focuses on advanced manufacturing technologies, product design, and industrial innovation. Activities highlight technical seminars, industrial talks, and exposure to emerging technologies such as 3D printing and automation. The program also expands its academic collaboration through student mobility and international engagement in Japan, South Korea, and Indonesia, strengthening cross-cultural and technical competencies. By combining industry-driven projects, innovation-oriented seminars, and global collaborations, the DMP program ensures that students are prepared to meet the evolving demands of modern manufacturing industries. The initiatives not only equip students with technical knowledge but also cultivate adaptability, creativity, and readiness for innovation-led production environments. The DMP program carried out **10 collaborative activities** involving **9 industries and organizations**. Activities emphasized innovation in production, knowledge transfer, and active collaboration between academia and industry.

Key highlights include:

- **Industrial Attachment & Supervision** – Lecturers engaged in industrial attachments, while students collaborated directly with industry in joint projects.
- **Collaborative Projects** – Initiatives involving both lecturers and students created opportunities to apply classroom knowledge to real industrial challenges.
- **Knowledge Sharing & Seminars** – Seminars on safety processes and technical topics enriched both staff and students with updated industrial practices.
- **Industry Recognition** – DMP lecturers and students were also invited to serve and present in industrial panels such as PITEX.

Impact: The DMP program fostered strong industry linkages with a clear focus on production-related expertise, safety, and applied research. It prepared graduates with hands-on industrial exposure, collaboration skills, and readiness to contribute to the manufacturing and production sectors.

G. Staff-Student Interaction, Student Advising and Counselling

The *Sistem Penasihatan Akademik* (SPAk) was introduced in polytechnics in 2004. Its purpose is to serve as a communication channel between students and academic advisors (PA). The scope and responsibility of PA are outlined in the Handbook on Scope of Duties and Responsibilities of Higher Education Officers (2022). Their responsibilities include the academic and personal development of students as it helps to develop goals, academic, career and self-esteem of the students. A one-hour session per week is allocated for each PA to meet their students to discuss their academic problems and other matters related to their studies.

Other than SPAk, students are also provided with advising and counselling career development services conducted by the Psychology Unit. The Psychology Officer and Counsellors are responsible for providing counselling or psychological counselling to the students based on the reference from PAs. Students are encouraged to see the psychological officer or counsellor with or without recommendation from their PAs. The unit also plans and implements psychological and career growth guidance for students.

Meanwhile, the CISEC Unit is responsible for designing and managing the supply of graduates in career direction as well as assisting students in determining employability and career paths after graduation.

C5-3 Discuss the sufficiency and competency of technical and administrative staff in providing adequate support to the educational program.

H. Sufficiency and Competency of Technical and Administrative Staff

DMP programme have sufficient and competent technical and administrative staff to support the implementation of the programme efficiently. Their particulars are shown in **Table C5-3a** and **Table C5-3b**.

Table C5-3a: Analysis of All Support Staff

Name	Post Held	Date of First Appointment at the Fac/Sch/Dept	Academic Qualifications/Field of Specialisation/ Institution and Year of Award	Years of Experience	
				Govt/ Industry Practice	This Fac/Sch/Dept
DEVELOPMENT AND MAINTENANCE UNIT					
NIK AHMAD HUSNI BIN NIK AB RAHMAN	ASSISTANT ENGINEER	15/12/2021	DIPLOMA OF MECHANICAL ENGINEERING	18	3
MUHAMMAD FAIZAL BIN MAT NOOR	ASSISTANT ENGINEER	2/11/2020	DIPLOMA OF MECHANICAL ENGINEERING	20	4
LAB ASSISTANT					
SITI KHADIJAH BINTI MAT TAHIR	PEMBANTU MAKMAL C2 (TBK)	23/4/2004	STPM	21	7 MONTHS
COMPUTER TECHNICIAN					
ILAVARASAN A/L NADARAJAN	ASST COMPUTER ENGINEER	13 AUGUST 2001	DIPLOMA IN ELECTRICAL (ELECTRONIC)	24	10
ADMINISTRATOR					
NURUL AINI BINTI NUFZI	PEMBANTU PEJABAT	27/7/2020	SPM	5	3
ZUERAINI BINTI ZAKARIA	PEMBANTU TADBIR	20/9/2009	SPM	16	1
SPORTS, CO-CURRICULUM AND CULTURE DEPARTMENT					
JAMALIAH BINTI JAAFAR	PENYELARAS	1/8/2002	IJAZAH PERDAGANGAN	22	21

MUHAMAD LUQMAN B. MOHD NAZIR	KETUA KURSUS PAKAIAN BERUNIFORM	3/10/2005	IJAZAH PENGAJIAN ISLAM	19	16
ROKIAH BINTI HASSAN	KETUA KURSUS SUKAN	1/1/2005	DEGREE OF ELECTRICAL ENGINEERING	19	16

Table C5-3b: Posts Held by Support Staff

Post	Number
Assistant Engineer	2
Lab Assistant	1
Computer Technician	1
Administration	3
Sport Technical Support	3
Total	10

C5-5 Discuss the implemented professional training scheme and incentives for teaching staff. List down teaching staff who have undergone or still undergoing training. Provided projected professional training programme

The institution has implemented a structured professional training scheme for teaching staff in line with the Ministry of Higher Education and institutional policy. Academic staff are encouraged and supported to attend certified technical, pedagogical, and industry-related training to enhance their teaching and professional competency.

Incentives provided include:

- **Financial support** such as course fees, travel allowance, and accommodation.
- **Priority in promotion and scholarship applications** for staff who actively participate in professional development.

Several staff have successfully undergone professional training, including certification courses such as **Professional Certification on KNX and Pneumatic from Festo** referred to **Appendix C5-5a**. This reflects the institution's strong commitment to professional staff development as part of its strategic plan.

The institution has outlined several projected professional training programmes for the next 2–3 years, focusing on both technical and pedagogical enhancement referred to **Appendix C5-5b**:

- **Technical Certification Programmes**: CNC Machining, Additive Manufacturing, Smart Factory & IoT Applications.
- **Pedagogical Training**: Outcome-Based Education (OBE) assessment, e-learning & blended learning strategies, curriculum innovation workshops.
- **Industry Attachment**: Short-term industrial placement for staff to gain current industry practices.
- **Soft Skills Development**: Communication, leadership, project management, and supervision skills.

C5-6 Discuss participation of teaching staff in consultancy activities

Participation of teaching staff in consultancy activities serves as a critical avenue for applying academic expertise to address real-world challenges. Such engagements not only enhance the professional competency of staff but also strengthen the linkage between academic institutions and external stakeholders, including industry, government agencies, and community organizations.

At PSA, consultancy activities take multiple forms, ranging from industry-driven projects to advisory roles and academic juries in competitions such as **POLYCCSKILLS** and innovation showcases. Staff also contribute as **panel members in workshops and** have been engaged in institutional initiatives such as the **commissioning of ILP Kuala Lumpur (ILP KL)**. In addition, many staff members are appointed as **paper reviewers in academic conferences**, reflecting recognition of their expertise within scholarly circles. These opportunities enable staff to demonstrate their knowledge, contribute to the advancement of academic and professional practice, and gain visibility at both national and international levels.

Importantly, consultancy contributes directly to institutional objectives by fostering knowledge transfer, expanding research collaborations, and generating outputs that align with grant-funded initiatives. Staff have successfully secured multiple government-funded grants, including **PPRN**, **Trans-Tech TVET**, and the **MOSTI MyGRIs grant**, all of which provide strong financial and structural support for innovation and research activities. Moreover, participation in consultancy strengthens career development pathways, as outcomes are incorporated into annual performance evaluations and promotion criteria. International collaborations, such as joint research and consultancy projects with **Polyteknik Caltex Riau (PCR), Indonesia**, further underscore the role of consultancy in extending academic impact beyond national boundaries. Collectively, these activities reinforce the institution's commitment to innovation, academic excellence, and sustainable community engagement.

The summary of staff involvement in research/ collaboration/consultancy activities can be referred to in **Appendix C5-6a.**

C6-1 Criterion 6: (i) Discuss the adequacy of teaching and learning facilities such as classrooms, learning-support facilities, study areas, information resources (library), computing and information-technology systems, laboratories and workshops, and associated equipment to cater for multi-delivery modes.

A Introduction

Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) provides a strong support in the implementation of Diploma Engineering programme in the Mechanical Engineering Department (MED). MED occupies 9 blocks of building namely KA, KB, KC, KD, KE, KF, KG, KH and KI. The main MED administrative office is located at Level 1 of Building KA block. The offices of the Head of Department and Heads of Programmes are located at KA block building of level 1.

This section discusses the engineering and general facilities provided by the MED, PSA. In general, the facilities consist of Teaching and Learning Facilities and Support Facilities.

B Teaching and Learning Facilities

The teaching and learning facilities comprise of lecture rooms, laboratories, workshops, library, as well as computer and IT facilities.

There are sufficient instructional lecture facilities available to ascertain effective delivery of the programme. More than 30 facilities are available which are categorized into lecture rooms which are able to be used with multimedia facilities and a seminar room. These facilities are located in block KA, KB, KC, KD, KE, KF, KG, KH and KI.

There are 16 lecture rooms located at the block KA building, each with an average capacity of 40 students, 5 lecture rooms located at the block KI building, each with an average capacity of 30 students, including 1 lecture hall with capacity of 80 students.

Drawing rooms are also located at block KA, which is at level 1. All lecture rooms are available to be used with LCD projection systems and desktops/laptops to further enhance teaching and learning. Such facilities are also used for seminar sessions. Most lecture rooms are either furnished with tables and chairs or flip chairs.

A few lecture rooms are also meant for tutorial classes. The tutorial rooms have basic facilities required to conduct optional tutorial sessions. Each room can cater to a maximum of 40 students.

MED has utilized three lecture halls for teaching and learning purposes. One hall is located at the Department of Mechanical Engineering (known as Mechanical Engineering Lecture Hall), one hall located near the Mathematics and Science Department (known as Auditorium Ibnu Sina)) and also the Multi-Purpose Hall(Known as Dewan Al-Jazari) which located beside administration block of PSA. The MED Lecture Hall can accommodate up to 150 students per session while the Main Lecture Hall can occupy a maximum of 300 students and the Multi-purpose Hall is with the capacity of 1500 students per session. These halls are also used for general assembly and briefing for new students.

MED has an independent study area as a self-learning facility for students to support students' achievement on students' learning outcomes. In addition, this place provides a conducive learning environment for students.

MED provides laboratories, computer laboratories and workshop equipment which are optimally used in teaching and learning process. These facilities are not only used for formal learning and teaching processes, but also as informal learning activity centre for upgrading the skills of students, staff and industrial community at large. The data **Table C6-1a** indicates that MED are able to provide substantial physical facilities for usage in delivering the curriculum, administration and conducting research.

Table C6-1a: List of Physical Facilities

No	Facilities	Present	
		No	Capacity
1.	**Lecture Hall**		
	Multipurpose Hall(Dewan Al-Jazari)	1	1500
	Main Hall (Auditorium Ibnu Sina)	1	300
	Mechanical Department Hall	1	150
2.	Lecture Room	20	30-40
3.	Technology Enable Collaborative Classroom (TECC)	1	30
4.	Laboratories/Workshops	11	40
5.	Library and Resource Centre	1	900
6.	Student Activity Room	1	40
7.	Student Learning Centre	1	40
8.	Drawing Room	2	40
9.	Interactive Room (KJA)	1	15
10.	Project Gallery	1	15
11.	Surau	1	15
	Others		
12.	Musolla Jumaat Prayer (Islamic Centralic)	1	1500
13.	Sports Complex (PSA sports Arena)	1	100
14.	Health Room	1	2

C The adequacy of physical facilities and equipment (such as workshops, studios, laboratories) and human resources (such as laboratory staff, technicians)

Physical facilities available at the polytechnic are sufficient in handling the implementation and development of the programme. Continuous improvement of the facilities is made to improve the quality of the facilities. The number of employees is at the optimum level. However, continuous improvement efforts are made to increase the number of posts at PSA to ensure the operations effectiveness. The maintenance management personnel carry out maintenance work periodically and based on needs by a qualified technician. The list of physical facilities and number of equipment is shown in **Table C6-1b** and the list of technicians and support staff are illustrated in **Table C6-1c**. The details of the physical facilities and equipment/tools can be referred at **Appendix C6-1a** and **C6- 1b** shows List of Course Involving with Practical Work.

Table C6-1b: Physical Facilities and Equipment

No	Laboratory/ Workshop	Number Of Equipments
1	Welding Workshop	60
2	Fitting & Machine Workshop	71
3	Foundry Workshop	15
4	Makmal ADMC	42
5	Strength of Material & Mechanics of Machine Laboratory	22
6	Pneumatic & Hydraulic Lab	9
7	Control Lab	15
8	CADCAM & Manufacturing Lab	19
9	Fluid Mechanics & Thermodynamics Lab	10
10	Metallurgy Lab	36
11	Maintenance Lab	5
12	Packaging Workshop	16
13	Packaging Testing Lab	24
14	Plastic Workshop	13

Table C6-1c: List of Technicians and Support Staff

No	Name of Technicians
1	Muhammad Faizal Bin Mat Noor
2	Nik Ahmad Husni Bin Nik Ab Rahman
No	**Name of Lab Assistant**
1	Siti Khadijah Binti Mat Tahir
No	**Name of Support Staff**
1	Nurul Aini Binti Nufzi

D Resource Centre (Library)

PSA library consists of a spacious and conducive study environment with capacity for 430 users consisting of 12 carrels, 11 discussion rooms, 1 audio-visual viewing rooms. It has sufficient seating. In addition, the library also provides an Integrated Library Management Utility (ILMU) systems, a computer lab as well as computer facilities for the library users.

Its total collection includes approximately 37,530 volumes of monographs, 30 serial titles on subscription, 1500 volumes of bound serials and 2,661 units of audio-visuals. In addition to

providing access to the internet, the library also subscribes to a number of online databases and electronic journals and e-books. The library uses the Library of Congress List of Subject Headings and the Library of Congress Classification Scheme to organize its collections.

The PSA Library Resource Centre is designed to ensure that the services and facilities provided satisfy the needs and expectations of the customers. The library implements strategies specifically designed to establish and strengthen liaison with customers, particularly the academic staff. The objectives are to market the library services and to solicit more active participation from the faculty members in patronizing the library services and forwarding recommendation of relevant titles to build and enrich the collection and feedback in the form of constructive criticisms and suggestions. The lists of engineering collections available in the library are 15,000 copies of General Collection and 560 copies of Reference Collection.

To complement the information resources available in the collection, the library offers systematically packaged information in its Webpage: https://perpustakaanpsa01.wixsite.com/digitallibrary. The main webpage provides links to selected electronic resources and websites according to subjects. In addition, specially packaged information, based on specific customer needs, is also made available in the webpage.

Facilities available at the library for the use of academic staff and students are able to support the Mechanical Engineering programme. PSA library provides the information about the library facilities and services through:

a. Orientation Week
b. PSA Portal
c. Library Bulletin
d. Email (lib.psa@gmail.com)
e. Manual Book
f. Counter Service
g. Library open day
h. Let's Read Programme
i. Benchmark Visit
j. Questionnaire
k. Bulletin infolib

To support the Mechanical Engineering programme, the library has provided facilities as listed in **Table C6-1d** with operation time as shown in **Appendix C6-1c.**

Table C6-1d: Facilities at the Library

No	Services	Equipments
1	Counter Circulation	a) Book Check and Computer b) Security Door c) Barcode Reader *d)* PA System
2	Discussion Room	Discussion Room 1 to Discussion Room 10 * Min use for 5 people * Maximum use for 12 people
3	Photostat Machine	* 1 Units * Self Service for staff
4	Newspaper Corner	a) Berita Harian b) Utusan Malaysia c) The Star d) News Straits Times e) Tamil Nesan f) Sin Chew
5	Magazine Corner	* 12 title (local & overseas)
6	Information Corner	* Current Information
7	Open Reading Space	Collection of subject *Material classification used Library Congress of Classification System (LCC) and Library Classification of Subject Heading (LCSH) *Capasity of 1000 people/session
8	Red Spot Corner	a) Student's Industrial Report b) Newspaper cutting
9	Exhibition Corner	Displaying information related to the history and current issues.
10	Childrens Corner	a) Children's Literature
11	Computer Room	a) 25 units of computers b) Printer c) Equipped with PMIS+LIS system d) Collection of Examination Question
12	Depository	a) 100 pigeon holes
13	OPAC Corner	a) 3 computers equipped with PMIS+LIS system
14	Indoor Games	a) Ludo Game b) Chess c) Cross word game d) Snake & ladder game e) Checkers game
15	CCTV	3

C6-1d List of reference books relates to programme.

To support this programme, the library provides reference materials related to this programme as shown in **Appendix C6-1d**.

E Information and Communication Technology (ICT)

The implementation of ICT in PSA is based on current policies issued by the Ministry of Higher Education (MOHE) and the Malaysian Administrative Modernization and Management Planning Unit (MAMPU).

PSA is equipped with a campus network system where all the academic and academic support ICT equipment is provided at PSA. Overall, ICT infrastructure consists of:

a. Intranet

b. Internet

c. Computer laboratories

d. WiFi Hotspot

e. CIDOS

(Curriculum Information Document Online System) is a platform that is implemented in Malaysian polytechnics in order to implement the teaching and learning process. This system allows students and lecturers to interact online no matter where the users are. Students can get the notes, training and academic resources that are shared online by the lecturer. Assessments for students such as assignments and quizzes can also be made online through CIDOS. CIDOS statistic usages are reported by ICT Unit to all CIDOS committee members at academic departments to observe e-learning implementation under CeLT unit. CeLT (Centre for e–Learning & Teaching) is a special name for the digital learning unit under the purview of The Instructional and Digital Learning Division, Department of Polytechnic Education. Ministry of Higher Education. CeLT is created to engage and assist the deployment of the e-Learning / Blended learning agenda in Malaysian polytechnics.

f. Staff Email Account
   - PSA email has been centralised under 1GOVUC Web which is implemented as cost-saving measures through an integrated collaborative communications where all the public sectors in Malaysia can communicate and ensure the success of the project through communication systems offered by 1GovUC.

g. Campus Network System

h. Students Data Storage

i. Online Application:
   - PSA Applications
     - PSA email
     - e-Dokumen
     - e-Fasiliti
     - e-Kenderaan
     - SPMP
     - e-HelpDesk
     - e-Senggaraan
     - Sistem Penilaian Prestasi Pembekal

- Sistem ELMU

- e-Government Applications
  - HRMIS
  - e-Perolehan
  - EPSA
  - SPA

- MOHE Applications
  - e-SIS

The description of each application can be referred in **Appendix C6-1e**

List of ICT PSA staff responsible for implementing ICT policies at PSA is given in **Appendix C6-1f**.

PSA ICT Unit is responsible to provide equipment, software and services related to the civil engineering programme such as computer supplies, accessories, new software installation, periodical maintenance, repairing works, webmail services and internet access to the CED communities. Other examples of PSA ICT Unit scope of work are as below:

a. Replacement and addition of computers in library, offices, laboratories and other units / departments.
b. Improve broadband network to a higher capacity.
c. Increase fiber network to a higher capacity for expansion of 'ports' network facilities.
d. Provide e-mails to all students by expanding coverage for WiFi hotspot in all offices, classrooms, and student residence.
e. To maintain and upgrade computers in computer labs according to the latest requirements.

Development of ICT services is implemented continuously through budget allocated under the Malaysian Plan. The list of licensed software provided in MED is given in **Appendix C6-1g**.

C6-2 Criterion 6: (ii) For programmes offered wholly or partly in distance mode, or at multiple or remote locations, describe how the facilities provided are equivalent to those provided for on-campus students.

Not applicable.

C6-3 Criterion 6: (iii) Describe the adequacy of support facilities such as hostels, sport and recreational centres, health centres, student centres, and transport in facilitating students' life on campus and enhancing character building.

F PSA Student Residence

Student Residence of PSA can accommodate a capacity of 1,272 students for every semester. It can reside as many as 636 male students in 1 and half blocks and a total of 636 female students in 1 and half blocks of the hostel. The capacity of PSA residence for student is given in **Table C6- 3a**. Students' residential hostels excel in providing students' accommodation which is comfortable and environmentally safe to support students' development and learning while producing educated and holistic semi-professionals.

The selections for placement in the student residence are stated as following:

a. New students – Residential hostels are offered to all new students of the first semester.
b. Senior Students – Interested senior students are required to apply accommodations in the residential hostels. The selection process is carried out by the management of the residential hostels based on certain selection criteria such as socio-economic background, special needs and students with disabilities. Students who are active in sports and extra-curricular activities are considered for residence too.

Table C6-3a: Capacity of PSA Residence for Students

	Male	Female
Total Block	1	2
Total Room	212	424
Total Bed	424	848

i) Student Residence Support Facilities:

ii)

Table C6-3b: List of Support Facilities provided at PSA Student Residence

Facilities	Capacity
Student Residence Office	1 Supervisor Office and 1 Warden Office
Cafeteria	3 booths at the main campus 1 booth at Student Residence
Washing Room	1 in every floor of student residence
Recreational Room	1 in every block of student residence
Musolla Jumaat Prayer (Islamic Centre)	A building for 1500 people
Wifi	The entire area of the student residence, around the Multipurpose Hall of PSA, ULPL area, cafeteria and academic departments

G Sport and Recreational Centre

PSA, through the Department of Sports, Co-Curricular and Culture (JSKK), provides facilities and infrastructure for sports and recreational activities. The list of sports and recreational facility and infrastructure is given in **Appendix C6-3a**.

H PSA Health Care Centre

For urgent medical attention, students are advised to go to the Health Care Centre for immediate medical attention.

a. A Medical Assistant Grade (U29) is placed at the PSA Health Care Centre by the Ministry of Health Malaysia.
b. First aid facilities are provided in the Supervisor's Office and Warden's Office.
c. Supervisor works during office hours while wardens will be on call after working hours.
d. The Medical Assistant will also monitor the cleanliness of the cafeteria and canteen.

In the event of emergency, students will be referred to Hospital Shah Alam or Hospital Klang by the academic lecturer or warden.

I Insurance/ Takaful (PSA Student Accident Group Insurance)

Each student will be covered under the insurance scheme known as 'Accident Takaful' and 'Family Group Takaful'.

Insurance Policy from Takaful Company has been selected to cover the scope and amount of coverage as follows:

Table C6-3c: Takaful Malaysia Scope and Coverage

Company	Scope	Sum Assured
Takaful Malaysia **Premium:** RM36.70 yearly Students are insured 24 hours during their studies in PSA	Death Total Permanent Disablement Burial expenses Death caused by accident Total Permanent Disablement by accident	RM5,000.00 RM5,000.00 RM 750.00 RM40,000.00 RM40,000.00
	Half Permanent Disablement by accident Expenses caused by accident Medical Expenses Burial expenses by accident	RM40,000.00 RM3,000.00 RM50.00 per day RM1,500.00

Actions to be taken during the occurrence of accidents are as follows: -

a. Students can get treatment from government or private hospitals in case of accidents.
b. Academic Advisors / Coordinators of Welfare / Students / Students Next Kin of Guardians / Guardians must report the accident to the Student Affairs Department (HEP), PSA within 14 days from the date of accident. HEP will notify Takaful within 30 days after the report is made for further actions to be taken.
c. In the case of the student's location is far from PSA and he or she may want to apply for claims from insurance companies, PSA will hand the "Insurance Claim Form" to the student / family / guardian for follow-up actions. The completed claim form and supporting documents can be delivered or mailed to HEP PSA.

Documents that need to be attached with the claim form are :-

a. A copy of the identity card and student card
b. A copy of the police report / industry
c. A copy of driver's license
d. Doctor report / Original medical bills
e. A copy of discharge letter
f. A copy of the death certificate / post mortem
g. Pictures (scene location / physical)

Police report as a supporting document is required in the case of road accidents and drowning. While the medical certificate is required for the case of death / paralysis. For industrial accident while training the industry, additional reports are required from the management of the industry.

J Cafeteria

Cafeteria serve foods and beverages to students and staff at the PSA, including those living in PSA Student Residence (Dormitory) PSA.
a. Capacity: 300 peoples
b. Hours of operation: Monday - Friday (6.30am - 5.30pm)
c. Operators: 3 operators for selling food and drink
d. Features:

- Air-conditioned room for lecturers and staff with a capacity of 30 people.
- Students Dining Area - Capacity of 300 peoples.

K Transportation

Transportation is provided for PSA students to ensure the involvement of students in formal and informal academic programmes. Vehicles such as buses, cars and vans are available to support the implementation of student activities that lead to increased student achievement including affective, cognitive and psychomotor domains. Details of the vehicles at PSA and list of Drivers' Name is given in **Appendix C6-3b**.

C6-6 Criterion 6: (vi) Discuss the procedure, monitoring process and management of safety, health and environmental aspects of facilities, including lecture halls, laboratories, teaching and safety equipment, etc.

L Procedure

Procedures ensure that facilities are used safely, maintained properly, and comply with legal/organizational requirements.

a. Lecture Halls

- Emergency Preparedness**:** Clear evacuation routes (emergency exit plan), fire extinguishers, alarm systems, fire drills and clear display of emergency exits.
- Occupational Safety**:** Proper seating arrangements, ergonomic considerations, adequate lighting and ventilation.
- Electrical Safety**:** Regular inspection of audio-visual systems, projectors, and wiring to avoid hazards.

b. Workshop and Laboratories

- Equipment Use**:** Standard Operating Procedures (SOPs) for each machine and equipment and training on handling laboratory instruments.
- Chemical Handling**:** Standard Operating Procedures (SOPs) for storage, labelling, and disposal of chemicals.
- Safety Noticeboard**:** Display all required information including Occupational Safety & Health Policy, Smoking, Alcohol and Drug Policy, workshop and laboratory rules, emergency contact number, emergency exit plan, safety notification and safety awareness signage.

c. Teaching & Safety Equipment

- Personal Protective Equipment (PPE)**:** Availability and proper use of safety shoe, goggle, welding shield, face shield, glove, ear muff, apron and face mask.
- Inspection & Calibration**:** Routine checks, maintenance and calibration of teaching tools and safety devices.
- First Aid & Fire Safety**:** First aid kits, wash stations, fire blankets, and extinguishers readily accessible.

M Monitoring Process

Monitoring ensures compliance with OSH standards and identifies risks early.

- Regular Inspections
  - Daily checks by staff for cleanliness, hazards, and functionality of equipment.
  - Scheduled audits by Safety and Health Committees.
- Incident Reporting
  - Systematic recording and investigation of accidents or unsafe conditions.
  - Corrective and preventive action follow-ups.
- Environmental Monitoring
  - Monitor air quality, noise levels, and waste management practices.
  - Compliance with environmental regulations of hazardous waste disposal.
- Audit and Compliance Review
  - Internal compliance with ISO standards, followed by corrective action.
  - Adherence to local occupational safety regulations (DOSH).

N Management

Effective management integrates OSH practices into daily operations.

- Safety & Health Committees
  - Formed as per legal requirement to oversee OSH implementation.
  - Emergency Response Team for JKM is formed as preparation to handle emergencies such as fire and critical incidents in facilities.
  - Regular meetings to review risk assessments and incident trends.
- Training & Awareness
  - Induction training for students and staff.
  - Regular workshops on lab safety, fire drills, chemical handling, and emergency response.
- Emergency Preparedness
  - Fire drills, evacuation simulations and first aid training.
  - Communication plans for emergencies (alarm systems, public address systems).
- Documentation & Record-Keeping
  - Maintaining risk assessments (HIRARC), chemical inventories, waste disposal logs, and training records.
  - Continuous improvement through feedback and audits.
- Resource Allocation
  -
  - Budget for safety equipment such as PPE, fire systems and first aid.

C6-7 Criterion 6: (vii) Discuss maintenance and calibration of teaching equipment/apparatus.

O Maintenance and Calibration

The department performs preventive maintenance of the equipment used in the workshops and laboratories by the students twice a year prior to the beginning of a new semester. The equipment's are routinely inspected and maintained to assure the proper performance so that the ratio of equipment and students can be maintained as targeted. The Lab Supervisors have the responsibility to ensure all equipment are checked and calibrated (if any), their usage is controlled and properly maintained. In case of defective equipment resulting in unsatisfactory performance during use, the following actions are taken: -

a. Maintain/recalibrate the equipment immediately, or
b. Consult equipment supplier immediately to check and rectify the error and report the defective equipment in an online system.

C6-8 Criterion 6: (viii) Discuss CQI activities implemented in relation to facilities.

P CQI Activities

CQI activities for facilities focus on preventive maintenance, safety compliance, feedback and benchmarking to ensure that lecture halls, workshops, laboratories, and equipment continuously improve to meet the standards.

1. Facilities Maintenance and Upgrading

- Preventive Maintenance:
  Scheduled servicing of workshops and laboratories equipment, electrical wiring and safety systems to prevent breakdowns.
- Facility Upgrade:
  Introducing smart classrooms, Technology Enable Collaborative Classroom (TECC), energy-efficient lighting, and upgraded lab technology to enhance teaching and research. Details of TECC is given in **Appendix C6-3c**.
- User Feedback Loop:
  Gathering input from students, lecturers, and lab staff to identify facility shortcomings and implement corrective actions.
- Accessibility Enhancements:
  Continuous improvements for differently-abled users, such as ramps, ergonomic seating, and assistive technology.
- Benchmarking:
  Comparing facilities against other institutions to identify gaps and implement best practices.

2. Safety, Health & Environmental Improvements

- Regular Safety Audits:
  Conducted by Safety & Health Committees to ensure compliance with occupational safety standards.
- Emergency Drills & Training:
  Continuous refinement of evacuation procedures and fire safety practices.
- Sustainability Practices:
  Implementing green initiatives such as rainwater harvesting, and energy-saving campaigns.

C7-1 Outline the organizational structure of the IHL including the structure within the faculty/department/programme.

A. Introduction

Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) operates under the Department of Polytechnic and Community College Education (JPPKK), which manages the administration and governance of polytechnics and community colleges across Malaysia. To strengthen the role of polytechnics and community colleges in education and training, the Cabinet approved the merger of polytechnics and community colleges into a single department on 24 March 2017. The new organisational structure of JPPKK was subsequently endorsed by the Public Service Department (PSD) on 23 February 2018 and came into effect on 31 May 2019, as illustrated in **Figure 7-1a**. This structural consolidation aimed to enhance coordination, governance, and strategic development of technical and vocational education at the national level.

Figure 7-1a: The Organizational Chart of the Department of Polytechnic and Community College Education (JPPKK)

PSA is committed to the highest standards of quality in delivering its academic programmes. Its management committee ensures that the management system is implemented in accordance with programme accreditation requirements and the institution's ISO 21001:2018 Educational Organization Management System certification. Continuous monitoring and evaluation mechanisms are in place to ensure the effectiveness of these systems and to support continuous improvement. The organisational structure of PSA is presented in **Figure C7-1b**, illustrating governance from institutional leadership down to departmental and programme levels.

B. PSA Management Overview

PSA Management and Leadership PSA promotes constructive leadership to drive the development and continual improvement of the institution through:

- Developing, implementing, and evaluating PSA's strategic direction.
- Establishing a system for top-down and bottom-up communication across all levels.
- Promoting shared values that unite the PSA community
- Reviewing the suitability, adequacy, and effectiveness of the Quality Management System (QMS) through management meetings and review sessions.
- Ensuring the availability of resources required for implementing, maintaining, and improving all main processes as outlined in the QMS.

Figure C7-1b: Organizational Chart of PSA Management

To support sustainable management, in 2020, PSA established two main categories of committees:

1. High-level Management Meeting (AMT) – serving as the strategic group, comprising the Director, Deputy Director (Academic), and Deputy Director (Academic Support).
2. Management Meeting Committee (AMP) – serving as the tactical group, comprising heads of centres and units within PSA.

Regular meetings are conducted at different levels to ensure the implementation of all processes is aligned with the institutional action plan. The hierarchy of meetings includes:

- PSA Management Meeting – focusing on operational matters.
- Academic Management Meeting – discussing academic-related issues.
- Department Meeting – reviewing departmental operations and initiatives.
- Management Review Meeting (MRM) – conducted at least once per year to ensure continuous quality improvement.

C. Role of AMT and AMP

High-level Management Meeting (AMT):

- Strategic Oversight: Focuses on high-level decision-making and sets long-term goals for PSA.
- Policy Formulation: Develops policies aligned with PSA's mission and vision.
- Resource Allocation: Prioritizes initiatives and allocates significant human and financial resources.
- Risk Management: Assesses and manages risks impacting strategic objectives.

Management Meeting Committee (AMP):

- Tactical Decision-Making: Translates AMT's high-level strategies into actionable plans.
- Implementation Planning: Plans programmes and projects, defining timelines and allocating resources at a detailed level.
- Operational Coordination: Oversees daily operations of centres and units.
- Performance Monitoring: Evaluates departmental and unit performance to ensure alignment with strategic goals.

Within PSA, the institution is structured into four core academic departments and two academic support departments, all working together to ensure the effective delivery of its programmes. The Department of Mechanical Engineering (JKM) is one of these core academic departments, playing a central role in providing high-quality technical education in the field of mechanical engineering. JKM is led by a Head of Department (HOD), supported by three Heads of Programmes (HOPs), 39 academic staff, and four support staff.

The department currently offers three academic programmes: Diploma in Mechanical Engineering (DKM), Diploma in Mechanical Engineering (Industrial Packaging) (DMP), and the Exclusive Certificate in Mechanical Maintenance (KMK). The KMK programme is specifically designed for deaf students (*OKU Pendengaran*), reflecting JKM's commitment to accessibility and inclusivity in technical education. Through a combination of structured curriculum, practical training, and professional development opportunities, JKM ensures that its graduates are equipped with both technical competence and professional skills to meet industry standards.

Table G7-1a and **Figure G7-1c** provide the general information and organisational chart of JKM, illustrating the department's internal governance and operational framework that support its academic and administrative functions.

D. General Information of JKM

Name of Head of Department	Muhammad Faiz Bin Abdullah
Phone Number to be Contacted	03-51634000 ext: 1235
No. of Programmes Offered at the Department	3
Name of Programmes	Diploma in Mechanical Engineering
	Diploma in Mechanical Engineering (Industrial Packaging)
	Exclusive Certificate in Mechanical Maintenance
Number of MED Staff	47

Table G7-1a: General Information of JKM

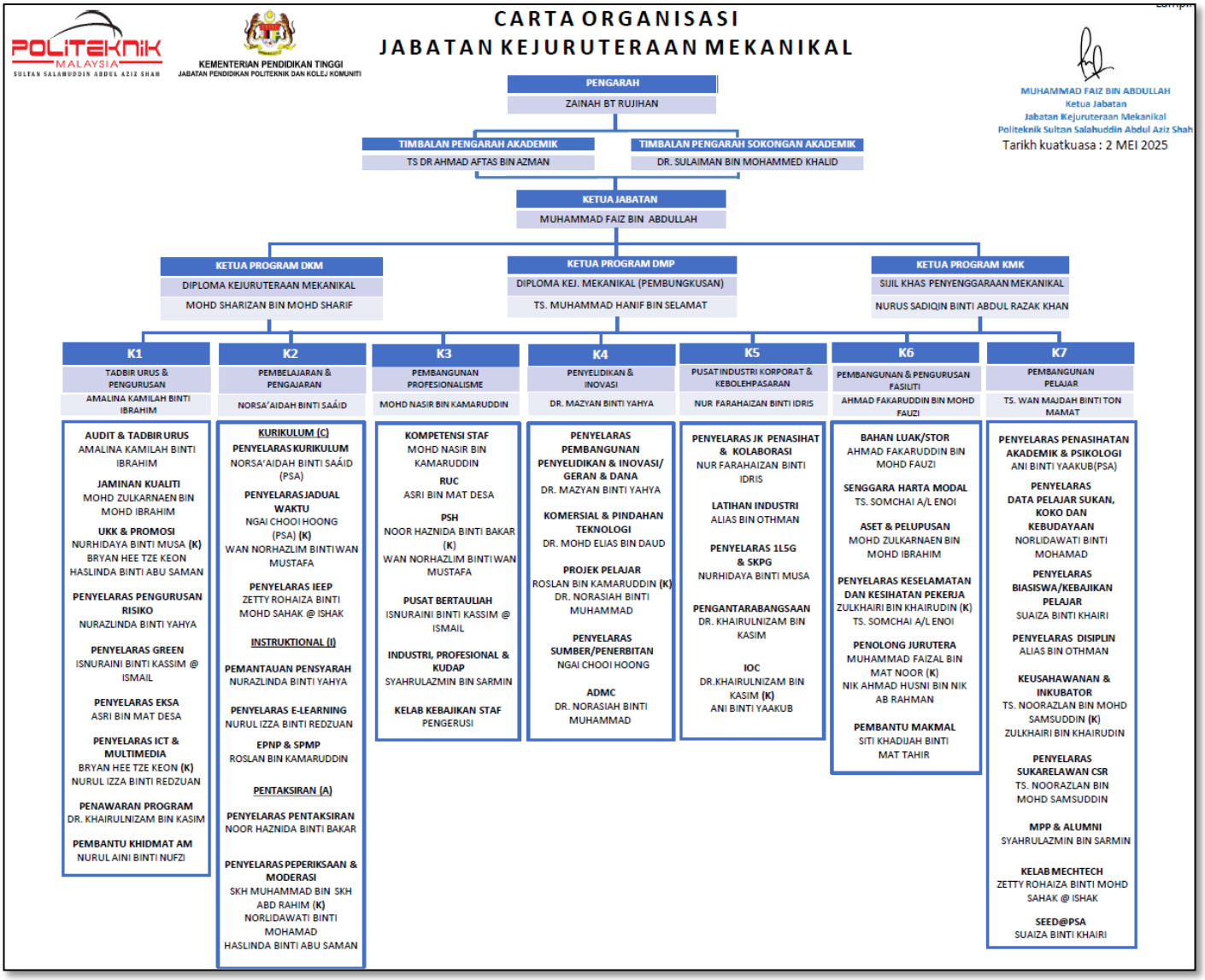

Figure G7-1c: The Organizational Chart of JKM

C7-2 Discuss the level and adequacy of institutional support, operating environment, financial resources, constructive leadership, policies and mechanism for attracting, appointing, retaining and rewarding well qualified staff and provision of professional development, and provision of infrastructure and support services to achieve PEO and PO and assure continuity of the programme.

E. Introduction

The Quality Management System (QMS) provides a framework to manage all related processes, ensuring high-quality services to stakeholders and implementing continuous quality improvement. A structured mechanism for disseminating and receiving information is critical. **Figure C7-2a** illustrates the general process of assuring process quality. The Department of Polytechnic and Community College Education (JPPKK) develops curricula based on input from content experts with active stakeholder involvement. Recruitment of academic staff and student intake are also key responsibilities. JPPKK has partial autonomy regarding allocated posts and staff appointments, subject to approval by the Public Service Department (PSD) and the Education Service Commission Malaysia. JPPKK also plans and submits financial proposals based on financial review meetings. The main task of all polytechnics is to deliver programmes according to designed outcomes, supported by available resources. To ensure continuous quality improvement, feedback from employers and alumni is systematically collected, analysed, and used to review and enhance all educational programmes.

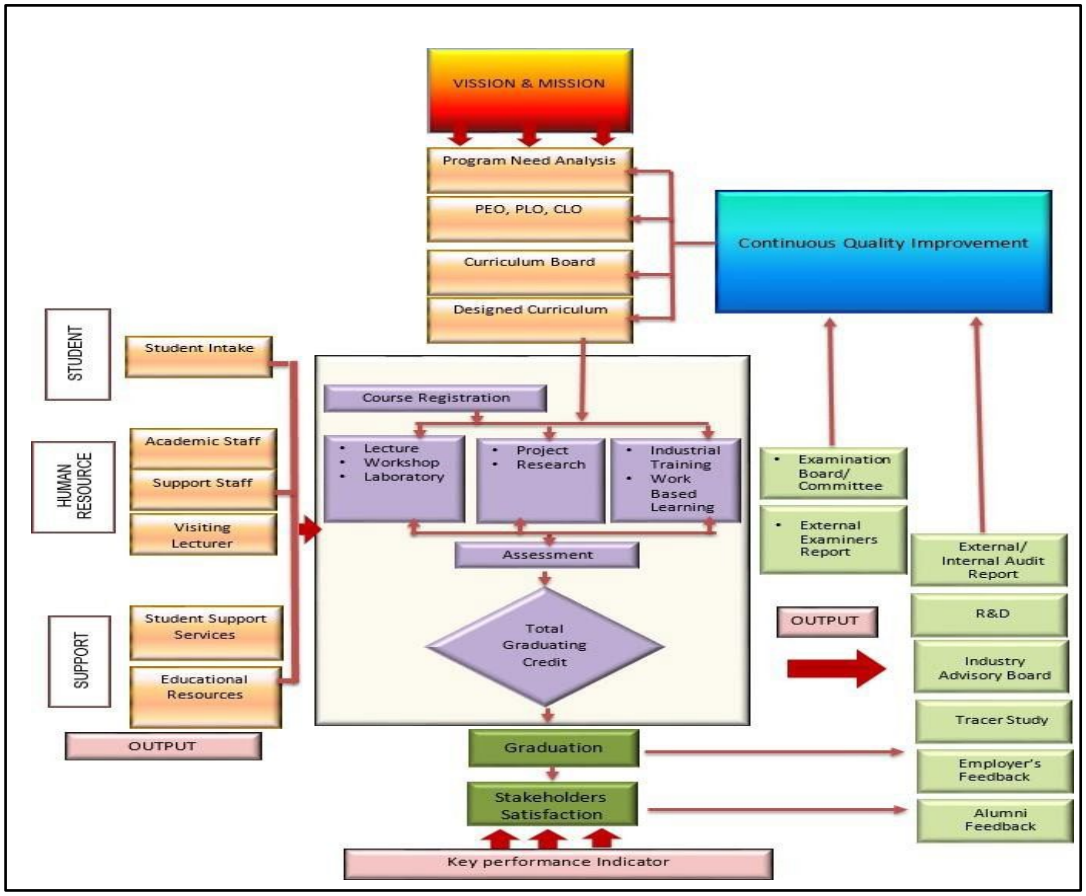

Figure C7-2a: Quality Assurance Process of Polytechnic Education System

F. Financial Resources

Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) is a public higher education institution under the Ministry of Higher Education (MOHE) and is fully funded by the Government of Malaysia. Each polytechnic, including PSA, is required to identify its operational and developmental financial requirements for the forthcoming fiscal year based on planned programmes and activities. At the departmental level, budget allocations cover programme management, teaching and learning activities (PdP), and student-related programmes and activities. All budgetary requests are submitted through formal proposals to PSA management for review and prioritization. The PSA management consolidates these departmental requests and submits the overall financial proposal to MOHE for approval. As is standard practice, the approved allocation may not fully match the requested bid. Consequently, PSA internally prioritizes and allocates resources across its departments and units, ensuring that critical and high-priority programmes and activities receive adequate funding. To ensure effective financial management, the Finance Unit regularly monitors and reports on the institution's financial status through periodic meetings. In addition, the unit undergoes external audits by relevant authorities to ensure compliance with the financial regulations and guidelines set by the Ministry of Finance, Malaysia.

G. Adequacy of Constructive Leadership

PSA management promotes constructive leadership for the development and improvement of PSA by:

a. Developing, implementing and evaluating of PSA's strategic direction.
b. Establishing a system for top-down and bottom-up communication across all levels.
c. Establishing and embracing shared values that unite citizens of PSA.
d. Reviewing the suitability, adequacy and effectiveness of Quality Management System
e. (QMS) through management meetings and management review meetings.
f. Ensuring the availability of resources required for implementing, maintaining and improving all main processes as outlined in the QMS procedure.

H. Academic Committee

The Academic Committee (**Figure C7-2b**) oversees all matters related to teaching and learning, including syllabus interpretation, curriculum review, and assessment of students' coursework and final examinations. Industrial training, a critical component of polytechnic education, is closely monitored to ensure the attainment of its outcomes. The committee is led by the Deputy Director of Academic and includes the Heads of Academic Departments, Head of Examination Unit, Head of Industrial Training Unit, and representatives from the Centres of Research and Innovation, Technology (CMET), Multimedia Technology, Corporate, Industrial Services and Employment (CISEC), and Work-Based Learning (WBL). Teaching and learning issues are discussed and decided during committee meetings, with the Quality Assurance Unit involved when matters pertain to quality documents and procedures.

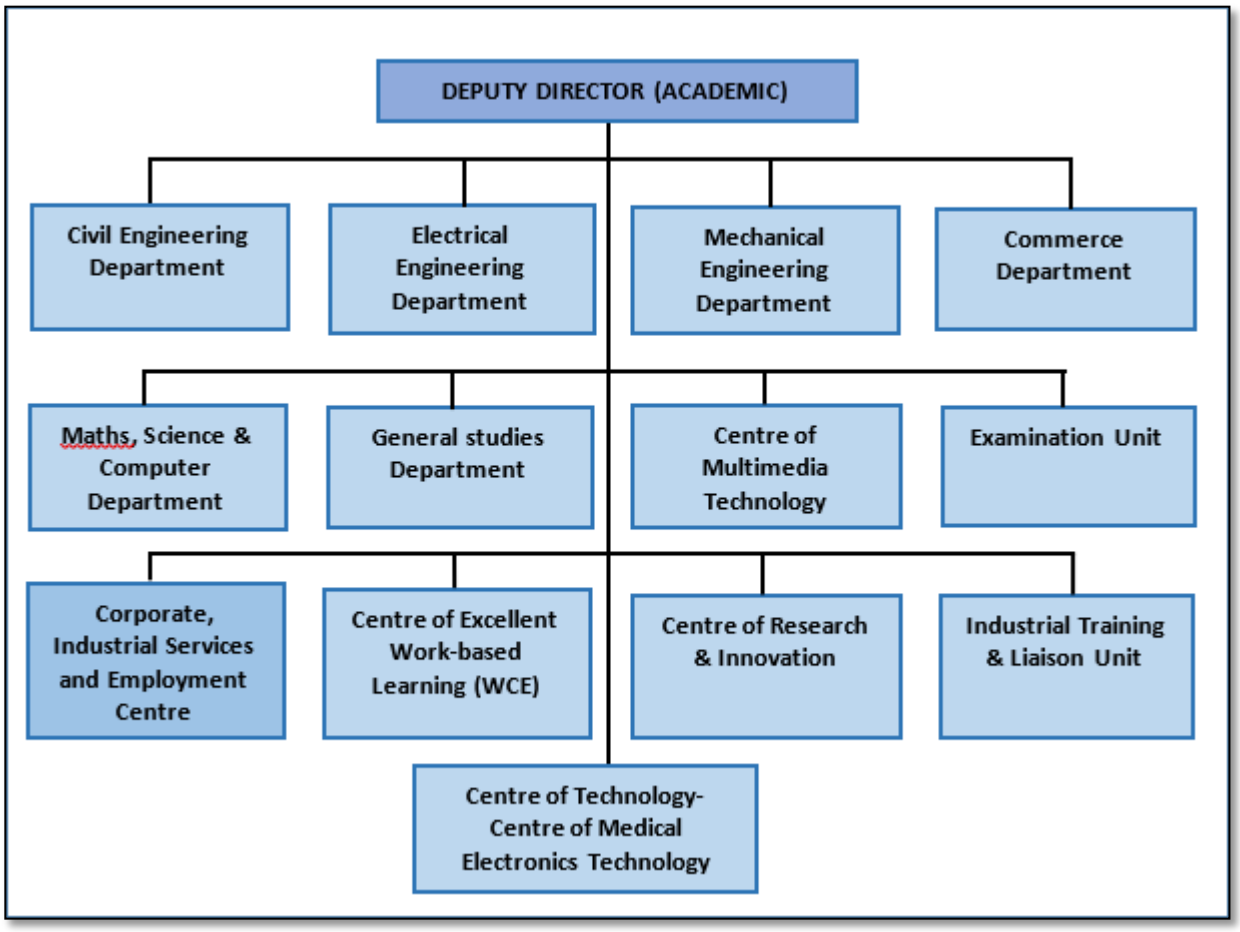

Figure C7-2b: Academic Committee

I. Academic Support Committee

The Academic Support Committee as in **Figure C7-2c** is led by Deputy Director (Academic Support) and investigates the facilities, training of the staff and all supporting matters in relation to the teaching and learning activities as well as the management of the IHL. The team members of academic support are Students' Affair Department, Sports, Co-Curriculum, and Cultural Department and all the heads of units consisting of Administration, Communications Corporate, Instructional Development and Multimedia, Facilities, Development and Management, Information Technology, Research and Innovation, Training and Professional Development, Library, Psychology and Entrepreneurship.

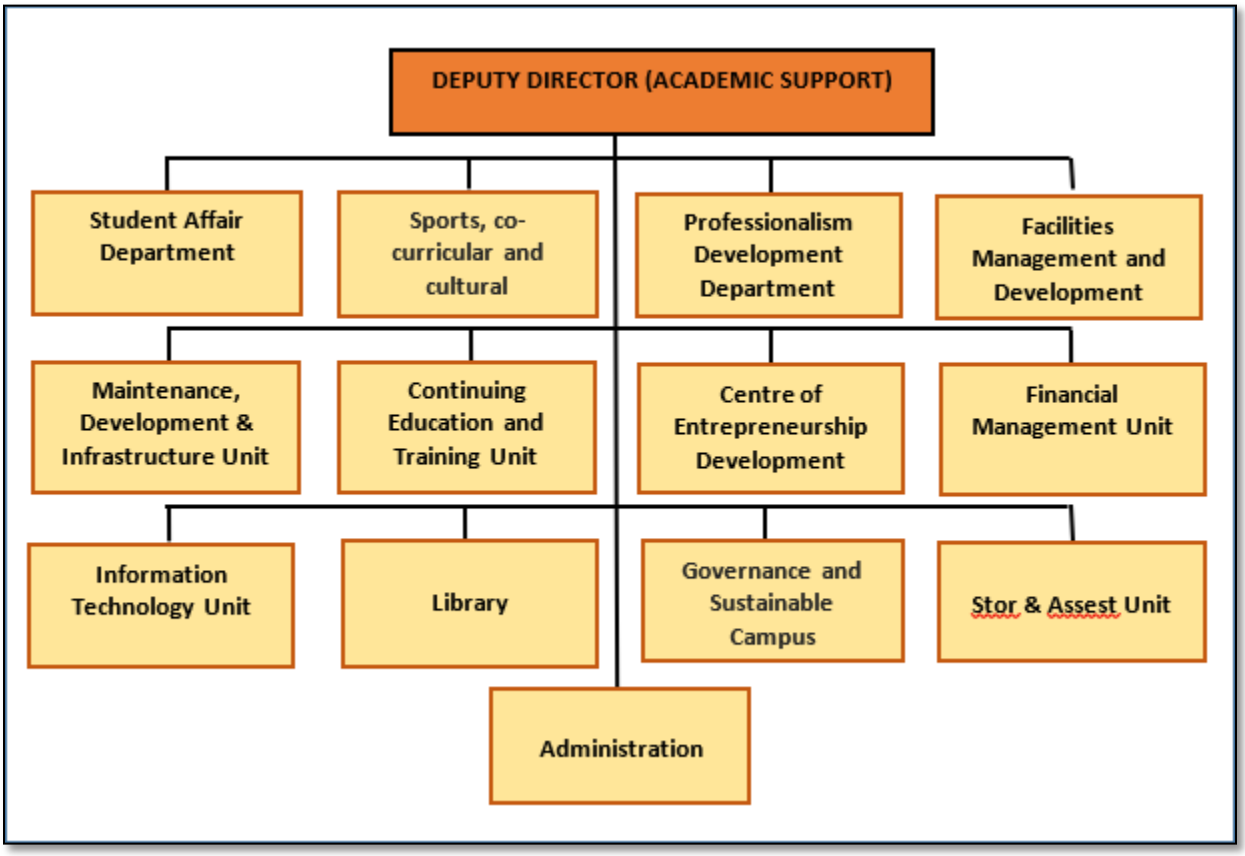

Figure C7-2c: Academic Support Committee

J. PSA Quality Management System Overview

Quality Management System (QMS) provides a framework for managing all related processes to provide quality services to customers and to satisfy the stakeholders' requirements by implementing continuous quality improvement (CQI). Being a centralized system, a structured mechanism in the disseminating and receiving of information to and from the institutions is indeed critical.

The initial journey of ISO certification at the Polytechnic Sultan Salahuddin Abdul Aziz Shah (PSA) began in 1999. At that moment, PSA took a major initiative by becoming the first polytechnic institution to successfully obtain the MS ISO 9002:1994 certification from SIRIM. In 2002, PSA recorded significant achievements and successfully implemented the transition of the quality system from the MS version ISO 9002: 1994 to the version MS ISO9001:2000. As an educational entity committed to improving quality and management, PSA continues to step forward in improving the compatibility of quality management systems with current standard requirements. Through continuous efforts in line with evolution, PSA has achieved MS ISO 9001:2008 certification and beyond, MS ISO9001:2015 certification. This recognition demonstrates PSA's excellence in applying best practice in quality management and strengthening their involvement in the ISO certification process.

K. ISO 21001:2018 - Educational Organization Management System

As a premier educational institution, PSA is determined to provide a more stable and relevant learning experience. Aware of the current changing educational landscape, PSA has made a strategic shift by introducing Educational Organization Management Systems (EOMS) based on the ISO 21001:2018 standard. The move began in 2021 and continues to this day. PSA is committed to ISO 21001:2018 as the institution framework and approach used to ensure that quality in all aspects of operations and services within PSA is implemented and supervised. It combines processes, procedures, and practices designed to meet established quality standards.

The implementation of EOMS at PSA focuses on 7 Excellence Criteria which have been simplified based on the following model shown in **Figure C7-2d**. The PSA 7 Excellence Criteria in PSA are as follows:

K1 - Governance and Administration
K2 -Teaching and Learning
K3 - Staff Development
K4 - Research, Innovation, and Commercialization
K5 - Corporate, Industrial Relations, and Employability
K6 - Other Resources
K7 - Student Affairs

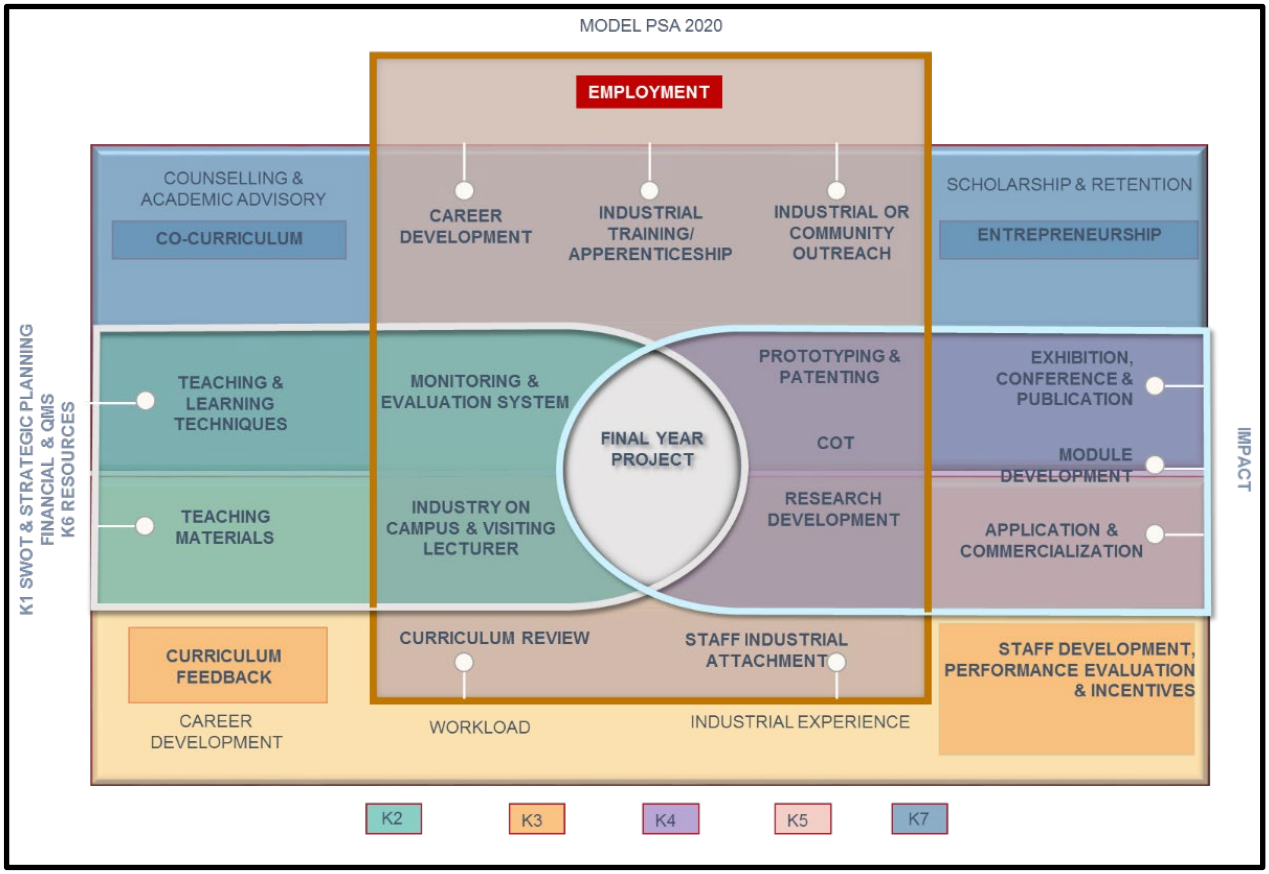

Figure C7-2d: PSA Management Model

To ascertain the implementation of all processes is in line with the action plan developed, regular meetings are carried out at different levels. The highest order in terms of hierarchy is the PSA Management Meeting where the main content of the meetings is on operational matters. Academic matters will be discussed at the Academic Management Meeting and at the Department Meeting. To ensure that continuous quality improvements are carried out accordingly, Management Review Meetings are carried out twice in each calendar year.

The implementation of the EOMS in PSA is aligned with the development of an integrated excellence management system based on the **Plan-Do-Check-Action (PDCA)** concept, which encompasses 7 PSA excellence criteria. The PDCA concept, which encompasses 7 excellence criteria and is depicted through the PSA PDCA - Management Model as shown in **Figure C7-2e.**

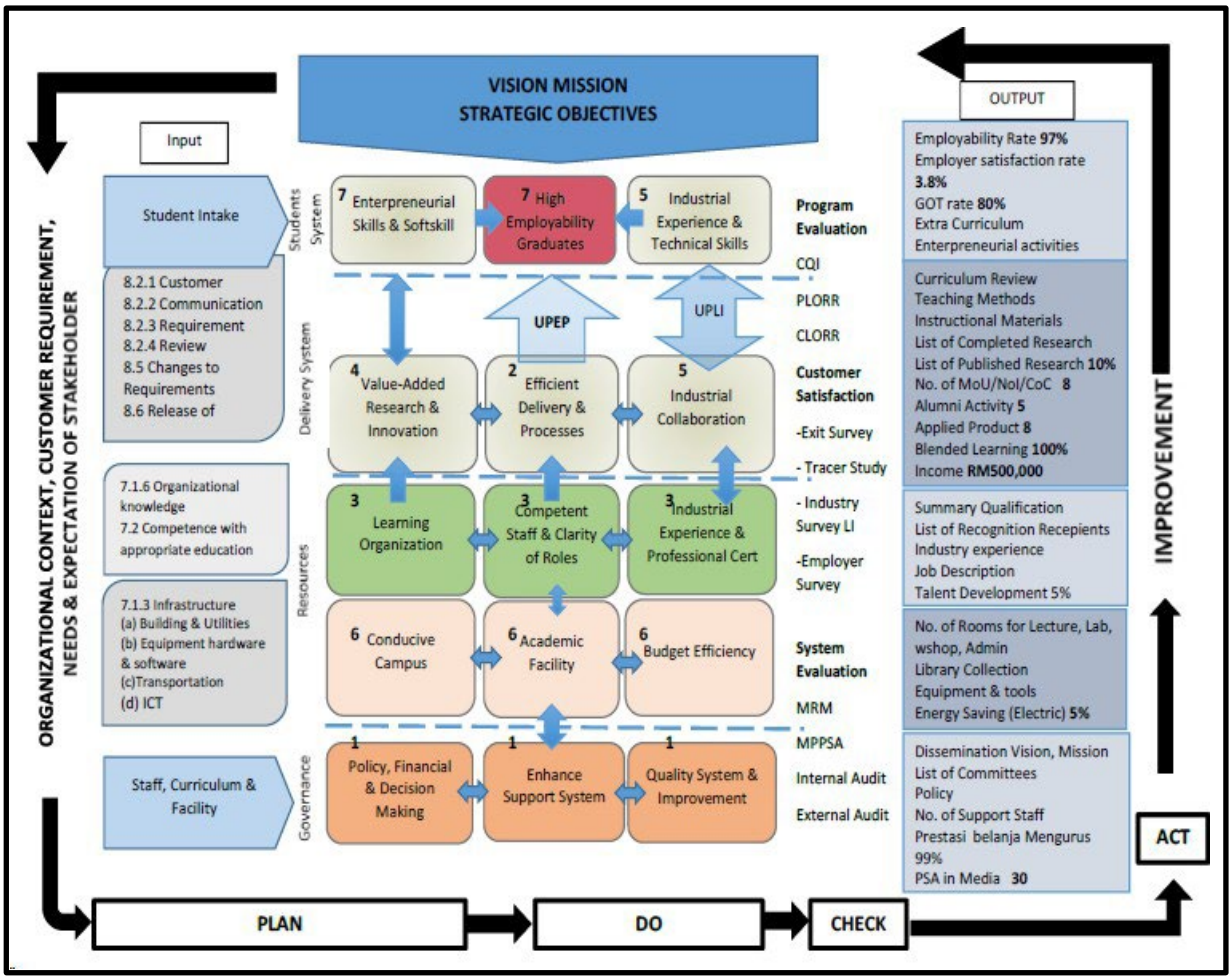

Figure C7-2e: PSA PDCA - Management Model

L. The scope and function of the PSA Excellence Criteria (*Kriteria Kecemerlangan*) according to QMS PSA

PSA PDCA - Management Model forms the foundation for the implementation of the EOMS within PSA. These 7 criteria of excellence serve as key drivers in ensuring the effectiveness and excellency of PSA Quality Management System while playing an important role in shaping the management of an effective and quality educational organization. Here are the general functions of each criterion in the PSA quality management system:

Criterion of Excellence 1: Governance and Administration (K1)

This criterion refers to effective administration in controlling educational institutions. It involves the establishment and implementation of effective policies, procedures, and organizational structures. Strong governance helps ensure transparency, accountability, and excellence in the delivery of education in PSA. This criterion of excellence also serves to consolidate governance as well as responsiveness in improving institutional performance in line with the principles, philosophy, vision, mission and goals set by JPPKK and KPT.

Criterion of Excellence 2: Teaching and Learning (K2)

The function of the Criteria 2: Teaching and Learning is to develop, organize, and oversee efficient methods of teaching and learning. It encompasses innovative teaching strategies, the use of technology in learning, as well as an approach that focuses on the needs and development of students, integration of technology in education, and a strategy that prioritizes students' needs and growth. These criteria's functions include planning, coordinating, and monitoring all activities associated with the Teaching and Learning Process (PdP). They also include developing the execution of learning and teaching using 21st-century teaching methodologies and the use of modern technology, including future technologies. Providing technical and multimedia assistance for the creation of digital material by developing ways to improve academic competency

Criterion of Excellence 3: Staff Development (K3)

This criterion is responsible for generating effective workers through comprehensive long-term talent development programmes. This criterion of excellence should focus on building the professionalism and expertise of academic and administrative staff through learning and development opportunities, as well as fair performance assessment. Continuous staff development helps ensure the level of quality in teaching, research, and management of institutions.

Criterion of Excellence 4: Research, Innovation, and Commercialization (K4)

These criteria serve to design, coordinate and monitor research, innovative discoveries, and commercialization opportunities of research results at PSA. Specifically, the functions of these criteria of excellence are:

a. Developing research and innovation
b. Disseminating and applying the results of project professors and students
c. Managing Research and Innovation

Criterion of Excellence 5: Corporate, Industrial Relations, and Marketability (K5)

These criteria are responsible for facilitating networking and collaboration between polytechnics and industry. Specifically, this criterion is responsible on the following matters:

a. Providing services and responses to the needs of industry, especially those involving collaboration and placement of graduates
b. Improving the marketability and employment availability of PSA student
c. Provide career advisory services, planning and preparation for graduates to the workplace
d. Implementing programmes designed by PSA and JPPKK to improve "graduate employability"

Criterion of Excellence 6: Facility Development and Management (K6)

These criteria refer to the management and provision of conducive facilities for teaching and learning. It involves the provision of appropriate infrastructure, the operation of facilities, as well as the sustainability and improvement of facilities in the long term. Specifically, the function of these criteria is:

a. Planning, coordinating, and monitoring the management of asset allocation and primary storage
b. Providing fundamental guidelines for physical construction, enforcement, and project management for development and facility projects, including planning and overseeing building upgrades, managing contracts for cleaning services, and mechanical and electrical systems.
c. Accelerating the foundation, strategic design of ICT, overseeing ICT allocation, overseeing ICT procurement processes, and ensuring the comprehensive operation of ICT systems and services, as well as providing technical support to ensure smooth system operations.
d. Assist in ensuring a safety and health of PSA environment by regular inspections related to safety, health, and work.
e. Monitoring the management of new collections from the academic department and coordinating the management of donated collections, journals, and newspapers, as well as preparing the process of updating library loan records.

Criterion of Excellence 7: Student Affairs (K7)

These criteria address the aspects of student welfare and management. They include the provision of quality student services, support in personal and professional development, and the management of student issues to ensure a holistic and satisfactory educational experience. Specifically, the functions of these criteria are:

a. Managing and processing the admission and enrolment of students
b. Planning and managing discipline-related matters
c. Monitoring and taking care of matters relating to student welfare
d. Planning, coordinating and implementing PSA voluntary activities

Design, managing, implementing and monitoring student activities by practicing and adhering to the principles in each of these excellence criteria, educational institutions can build and maintain an effective Management System of Educational Organizations, focusing on excellence in all aspects of their operations

M. Attracting and Appointment of Academic Staff

PSA is one of the polytechnics under the purview of the Department of Polytechnic Education, Ministry of Higher Education Malaysia. As mentioned, DMP has partial autonomy in terms of the number of allocated posts and the appointment of its academic staff and is subjected to the approval of the Public Service Department (PSD) and the Education Service Commission Malaysia (ESC). Academic staff under the polytechnic system are categorized under the DH scheme as stipulated by the PSD based on the Service Circular No. 33/2007: Service Scheme for Higher Education Officers. For all its polytechnics, DMP works closely with PSD and ESC to ascertain that the required academic posts and the appointment of its academic staff at all polytechnics fulfill the requirements of the education programmes. Specific and detailed requirements of the academic staff are relayed to ESC. ESC will then interview potential academic staff based on the eligibility of the candidates via online application. All polytechnics will receive new appointed academic staff via DMP based on their specialization and programmes offered at the polytechnic. Appointment of all academic staff under the DH scheme is governed by the Service Circular No. 33/2007.

Based on qualifications attained, the academic staff is categorized as shown in **Table C7-2a.**

No	Category	Minimum Qualification
1.	Management & Professional	Bachelor's Degree
2.	Support Group I	Diploma
3.	Support Group II	Certificate

Table C7-2a: Qualification and Position

Based on responsibilities and tasks and with reference to the Service Circular No. 33/2007, academic staff are categorised as shown in **Table C7-2b**.

Category	Category Descriptions
I	Academic staff fully focusing on teaching and learning process
II	Academic staff with major responsibilities of teaching and learning and in addition handling some management responsibilities
III	Academic staff at polytechnics undertaking management responsibilities
IV	Academic staff at the MOHE undertaking management responsibilities

Table C7-2b: Category Descriptions

In terms of attracting and appointment of academic staff, all processes are based on all the General Orders, Acts and Government Circulations.

N. Professional Development, Retainment and Awarding Mechanism

To ensure the effectiveness of the teaching and learning process towards the attainment of learning outcomes, a continuous professional development mechanism is essential. At PSA, with a total of 426 staff, structured initiatives are implemented in alignment with the framework established by DMP. Under this centralized governance system, all polytechnics, including PSA, are required to conduct internal processes that ensure staff receive the necessary training to enhance their knowledge and skills. Professional development is divided into three main components, as shown in **Figure C7-2f**.

Figure C7-2f: Professional Development of Academic Staff

Under the first component, academic staff is given the opportunities to develop their academic attainment by furthering their education at post-graduate or bachelor's degree level utilizing the scholarships offered with full- pay leave benefit. For those wishing to further their education as part-time students, benefits of unrecorded leaves are given for them to attend examinations. The second component of the professional development aims to develop the academic staff in their area of expertise including areas that support their work performance. Continuous trainings are designed for the novice as well as for the experienced. These continuous trainings are also designed to assist academic staff in their career pathways including promotional exercises. Trainings covered under the second component shown in **Table C7-2c.**

No	Training Policy	Type of Training
1.	Newly Appointed staff without teaching qualification	Course on Instructional Leadership and Andragogy Development (KIPA)
2.	Compulsory Courses in Current	• Career Path Competency Matrix (CPCM) • Skills Development Programme Program Peningkatan Kemahiran (PPK)

3.	Coaching and Mentoring Programme	Senior Lecturer as mentor to coach their junior lecturers in work related activities.
4.	Self-Development Programmes	In-Service Courses *Kursus Dalam Perkhidmatan (KUDAP)*
5.	Human Resources Training Policy	5 days as per MOHE's requirements

Table C7-2c: Types of Training

The **third component** of the professional development focuses on developing the expertise and skills of academic staff in line with the latest technological advancement in the related industry. Three approaches adopted are namely as shown in **Table C7-2d.**

No	Programme	Scope
1.	Lecturer Industrial Attachment (SIP) *(Sangkutan Industri Pensyarah)/LSI*	• Max duration of 90 days • In related industry
2	Professional Industrial Certification	Lecturers are encouraged to be certified by related industry in ensuring relevance of knowledge and skill.
3.	Internal Collaboration	• Lecturers are encouraged to collaborate at international level in areas such as research, teaching & learning approach • and lecturers exchange program.

Table C7-2d: Programme approaches for developing academic staff expertise and skills

O. Institutional Support and Operating Environment

The Training and Continuing Education Unit in PSA is in charge with the planning, implementing and evaluating of all trainings required by all the staff. The staff is given the opportunity to plan their self-development programmes with full support from the management. A comprehensive training needs analysis is carried out to establish training requirements. Based on this analysis and the financial resources available, trainings are carried out either internally or externally. Information regarding staff development training is distributed through letters, e-mails as well as internal circulars. The staff is also encouraged to submit applications to the respective units if there are any other courses or trainings that tailor to their needs.

Academic staff is always encouraged to be involved in consultancy works not only to be exposed to the latest industrial technology and real-world environment but also to fulfill the long-term objective of achieving membership with various professional bodies. PSA also encourages staff to participate in the professional development programmes by executing the training policy whereby staff is required to attend a minimum of four days of training programmes within a year. In addition, the institution encourages staff

to go for their industrial attachment (SIP)/LSI for a maximum period of 3 months especially so for academic staff without industrial experience. Academic staff may also be sent for professional certification courses based on needs of the departments as well as the institution.

Under the agenda of lifelong learning and in line with efforts to retain excellent staff, all lecturers are encouraged to further their studies at the master's or doctoral level. Information on the Hadiah Latihan Persekutuan (HLP) scholarship is disseminated by JPPKK through official announcements and advertisements, as referenced in **Appendix C7-2a**. These scholarships are fully sponsored by the government and are offered to eligible lecturers based on the proposed field of study.

Job promotion exercise in the scheme is continuously carried out by the JPPKK and academic staff may apply upon the fulfillment of all requirements. Promotion exercise is, among others, to ensure continuous career pathways and a method of ensuring work satisfaction amongst its employees. Academic staff is promoted to a higher grade upon fulfilling all the criteria that have been developed based on the categorization of work. Part of the main criteria to be fulfilled for promotion purposes is shown in **Table C7-2e**.

No	Evaluation Scope	Evaluation Items
1.	Teaching and Learning	• Implementation of teaching and learning activities and co-curriculum • Assisting in teaching and learning activities in the unit/department • Develop innovation related to their teaching and learning process • Supervision of students' academic projects or activities
2.	Research and Development	• Research within the current grade level
3.	Writing and Publication	• The writing and publication of research output and based on current grade level

Table C7-2e: Job Promotion Evaluation and Scope

Towards continuous career development, the management of PSA always encourages lecturers to do research and development in their related fields and to present their findings at suitable platforms, be it at institutional level, national level or international level. At the institutional level, a well performed staff will be awarded with Monthly Excellent Staff Award (Anugerah Pekerja Cemerlang Bulanan). The ceremony is conducted during the monthly assembly and the recipients receive a certificate from the Director whilst their pictures are displayed at the administration main building. In addition, a yearly event known as Excellent Service Award (Anugerah Perkhidmatan Cemerlang) is organized to appreciate the staff that have shown excellent service to the institution under the Department of Polytechnic Education. All awards given are bounded by the circular as in **Table C7-2f**.

Staff Evaluation	
Yearly Performance Evaluation	General Circular No. 4/2012 Malaysian Remuneration System - Staff Evaluation.
Policy in Rewards	General CircularNo.13/2012- Excellent Service Award Administrative Circular KPT.Bil.1/2008- Monthly Employee Awards.

Table C7-2f: Staff Evaluation

C7-3 Discuss the mechanism for the following: programme planning; curriculum development; curriculum and content review; responding to feedback and inputs from stakeholders including industry advisors, partner industry for WBL training (if applicable), students and alumni; tracking outcomes of performance through assessment; responding to External Examiners/Advisor comments; reviewing of PEO and PO; and the CQI. Where these are discussed elsewhere in the report, specify their locations. For a new programme, the IHL also needs to discuss the processes surrounding the decision to introduce the programme.

P. **Programme planning; curriculum development; curriculum and content review**The development and improvement of the curriculum are based on national-level acts, policies, and laws, development plans at the KPT level, and strategic plans at the JPPKK level, which serve as a guide for the BK in carrying out

curriculum development and improvement activities for polytechnics and community colleges. This curriculum development and improvement can be referred to in **Figure C7-3a**

Figure C7-3a Guidelines for Curriculum Development and Review of Polytechnics and Community Colleges

The curriculum development for new programme for Polytechnic and Community College programmes follows the design cycle outlined in the latest SOP for Programme Alignment and Delivery. As shown in **Figure C7-3b**, the process covers identifying programme needs, developing and verifying the curriculum, obtaining MLK/JKIK approval, and enforcing the use of curriculum documents. This ensures the curriculum remains relevant, of high quality, and aligned with current TVET needs.

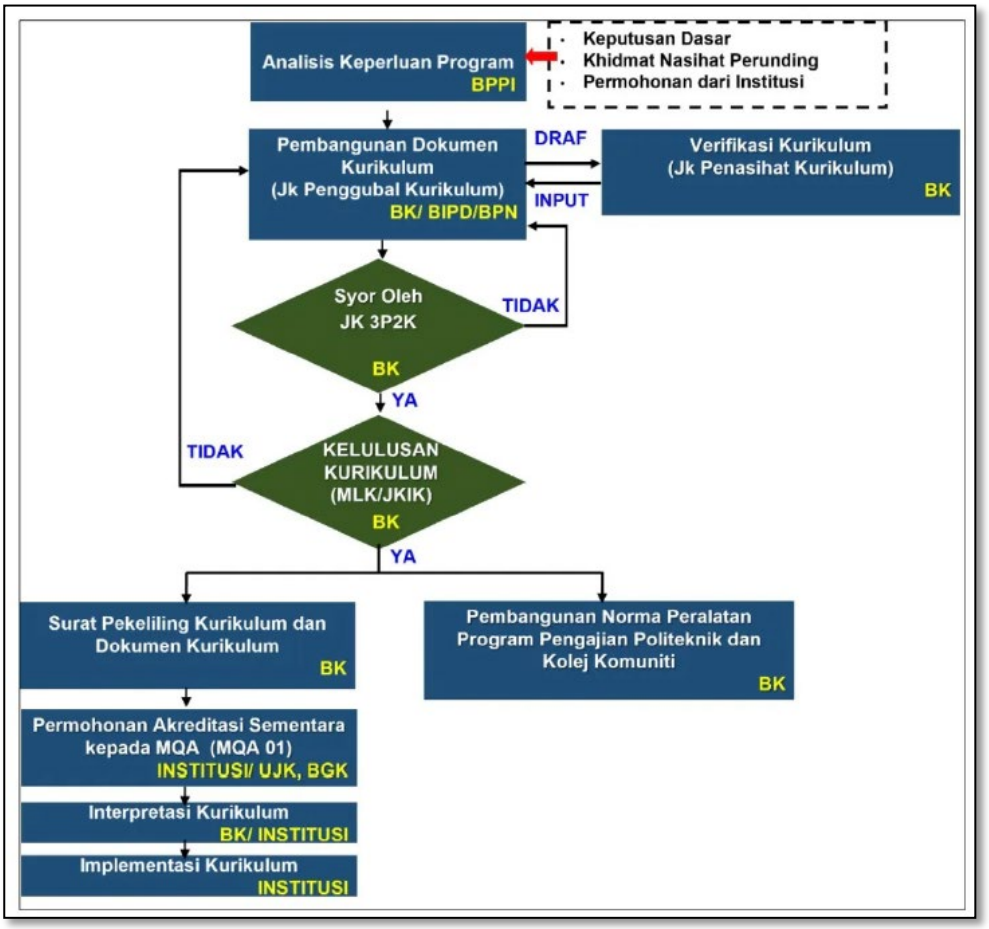

Figure C7-3b: Curriculum Development Process Flowchart

The curriculum review process for existing programme is essential to ensure that academic content remains relevant, aligns with job market needs, and reflects current technological and knowledge developments. As shown in **Figure C7-3c**, the process involves obtaining feedback, drafting, reviewing, approval, and enforcement at the institutional level. Each program must undergo these steps with thorough preparation and adequate planning to ensure effective implementation. Based on **Figure C7-3c**, the curriculum review process for academic programmes consists of five (5) main stages, namely:

a. obtaining input and feedback from stakeholders
b. implementing improvements to the curriculum document
c. obtaining curriculum verification from the Curriculum Advisory Committee

d. seeking endorsement from the Polytechnic and Community College Study Sub-Committee (JK3P2K)
e. securing approval from the Polytechnic Curriculum Board (MLK) and the Community College Main Curriculum Committee (JKIK)

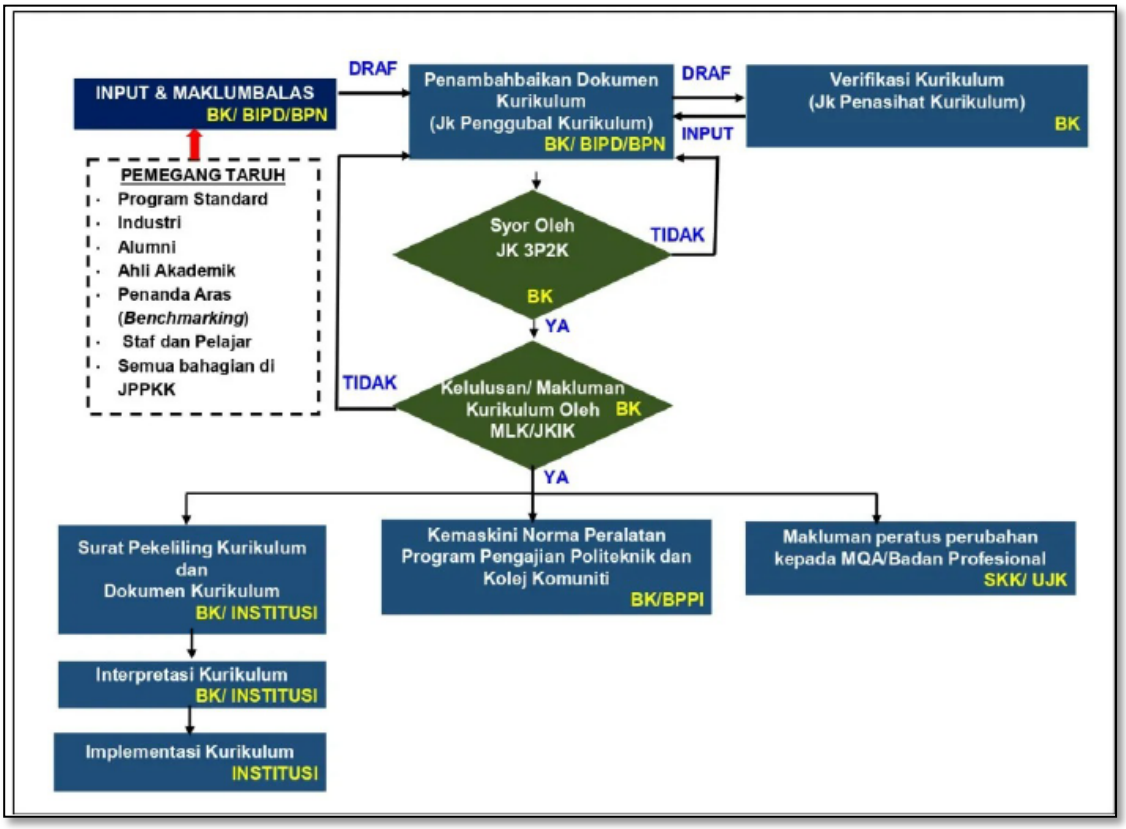

Figure C7-3c: Flowchart of Curriculum Review Process

C7-3d. Responding to feedback and inputs from stakeholders including industry advisors, partner industry for WBL training (if applicable), students and alumni

Stakeholder feedback is a key element in curriculum improvement, ensuring that programmes remain relevant and aligned with current industry and societal needs. **Figure C7-3d** illustrates how this process is implemented at the institutional level, where feedback is not only gathered within PSA but also coordinated and supported by JPPKK, which plays an important role in systematically incorporating stakeholder input.

No.	Stakeholder	Description	Related Report/Document	Responsible Division/Institution
1	Government/Quality Assurance Agency	Provides allocations and needs for an educated populace, sets policies	National Education Policy	JPPKK

		and the direction of higher education		
2	Industry/Employer	Provides input regarding the latest developments in technology and industry practices	Industry Advisory Committee (IAC) Report; Industry Advisory Meeting Minutes	BKIK and Institution
3	Accreditation Body	Ensures standards and registration of PPT qualifications	Program Standards/Accreditation Manual; Accreditation Audit Report	BGK and Institution
4	Association/Professional Body	Ensures the PPT is registered with the professional body	Related Meeting Minutes and Reports	Institution and JPPKK
5	Academician	Provides input regarding the latest developments in technology and the need for curriculum improvement	Program Advisory Meeting Minutes	Institution and BK
6	Lecturer	Academic and administrative staff whose lives are affected by the quality of PPT	Curriculum Feedback System; PLO Achievement Reporting System (S3P)	Institution and JPPKK
7	Parents and Student Sponsors	Parties who make financial investments and place their hopes in higher education	Achievement Analysis Report	Institution and BAPP
8	Alumni	Provides input regarding technological developments and past experience	Alumni Study; Graduate Employability Study; PEO Study	BKIK
9	Current Students	Students who forgo other activities and potentially income to study at PPT	Student Achievement Analysis Report via CORR and PLORR	BPN

Table C7-3a: Examples of Curriculum Feedback Sources/Documents

Q. Tracking outcomes of performance through assessment

The direct assessment methods which mapping to learning outcome for each course has been identified during the curriculum development process. After all assessment methods (formative and summative) are implemented, the data of assessment will be recorded into i-EXAM, SPMP. Then, the system will process all data and generate results for CLO and PLO achievement (CORR and PLORR). The performance of all outcomes will be interpreted by stakeholders to act as continuous quality improvement. The involvement and assessment of students in non-academic activities such as clubs, sports, uniform bodies and others were also indirectly contributing to the achievement of the PLOs.

i. **Mechanism for Responding to External Examiners Comments**

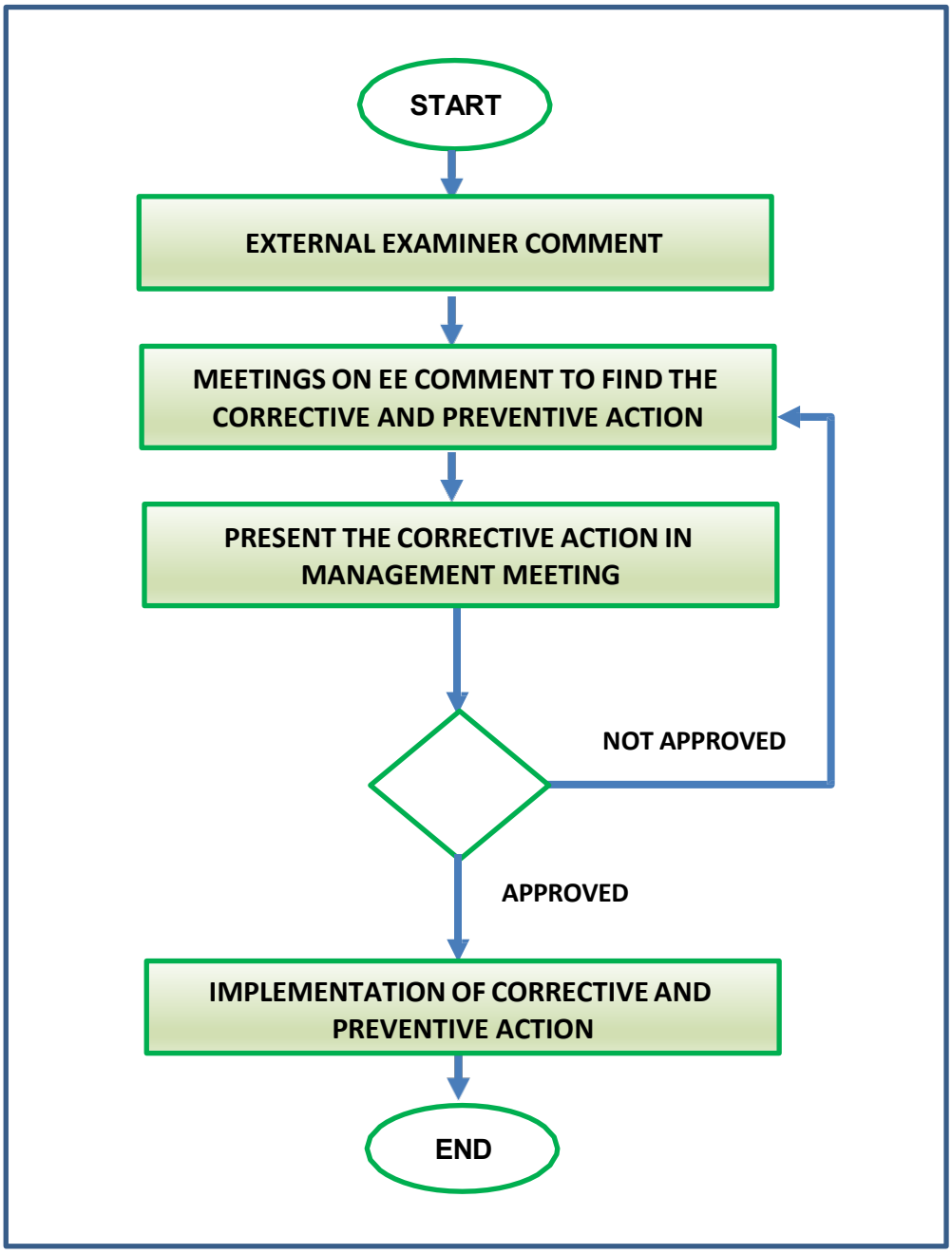

Figure C7-3e: Mechanism for responding to External Examiners Comments.

ii. Mechanism for Reviewing of Programme Objective and Programme Outcomes

Refer to Criterion 1 and 2

iii. Mechanism Continual Quality Improvement of the Quality System

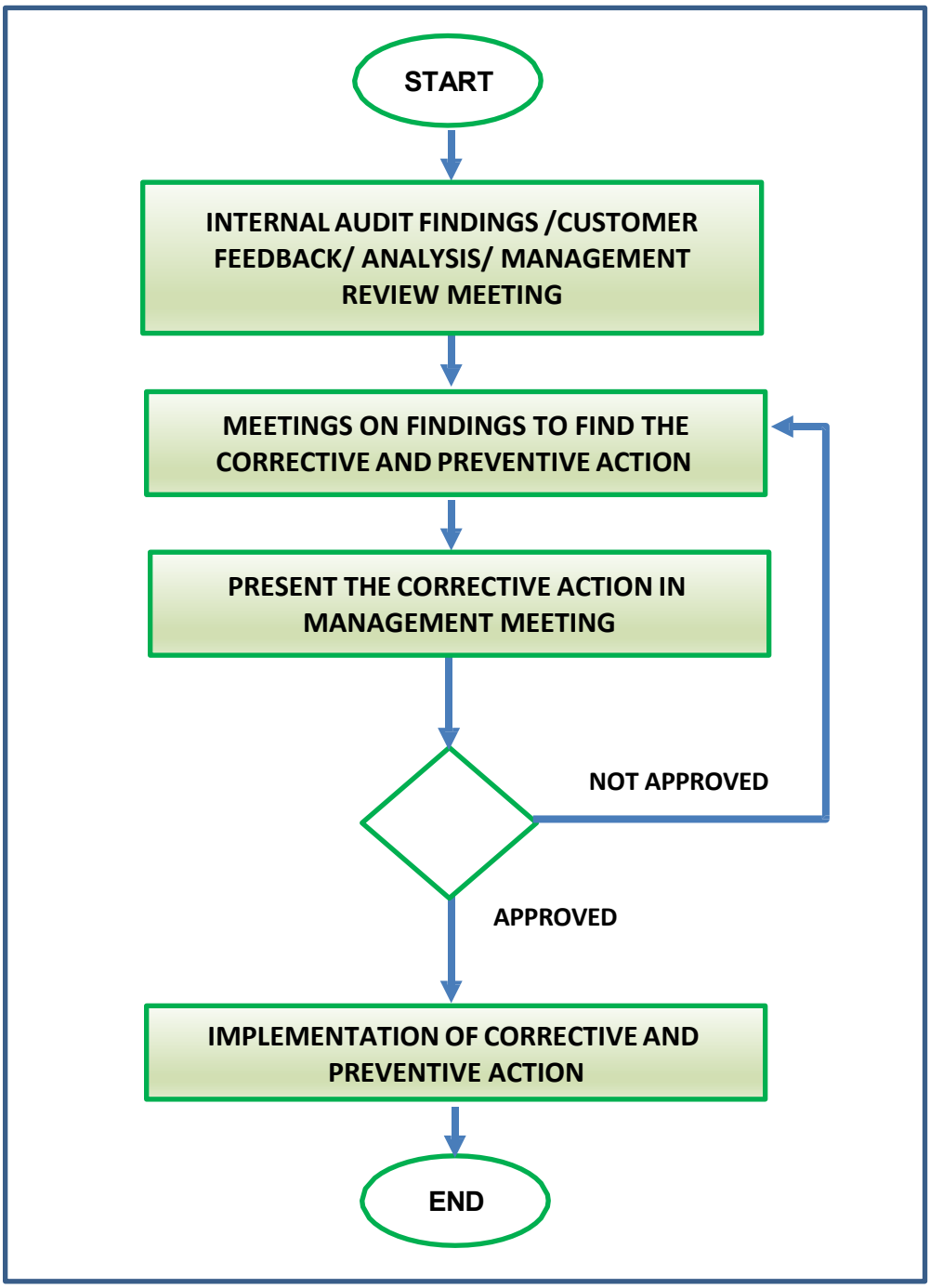

Figure C7-3f: Mechanism Continual Improvement of the Quality System

C7-4 Summarise Responses to the External Examiner/Advisor, IAP and Stakeholders and how CQI was carried out.

R. Summarise Responses to the External Examiner/Advisor

The Department of Mechanical Engineering (JKM) has reviewed and summarised feedback received from the External Examiner/Advisor, the Industry Advisory Panel (IAP) and other stakeholders as part of its Continuous Quality Improvement (CQI) efforts. The feedback covered various aspects including curriculum relevance, programme management, teaching and learning support, industry alignment, student development, and long-term sustainability of the programme. Based on these inputs, the department has implemented several measures such as curriculum enhancement, improved monitoring of industrial training, strengthening industry collaboration, capacity building for staff, and reinforcing student support mechanisms. These actions demonstrate a structured CQI process where recommendations are translated into continuous improvements to ensure the programme remains relevant, sustainable, and responsive to stakeholder needs.

Evidence of stakeholder engagement and CQI actions are provided in the following appendices:

a. Appendix C7-4a: External Examiner/Advisor Report
b. Appendix C7-4b: Feedback for External Examiner/Advisor Report
c. Appendix C7-4c: Minutes of Industry Advisory Panel (IAP) Meeting
d. Appendix C7-4d: Feedback for Industry Advisory Panel (IAP) Minutes of Meeting

C7- 5 Summarise benchmarking reports and how CQI was carried out

At Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA), stakeholder feedback serves as a critical foundation for programme enhancement. Input is systematically collected from industry partners, professional bodies, alumni, lecturers, and students to ensure that the programmes offered remain relevant, current, and aligned with the evolving demands of the job market.

Complementing stakeholder input, benchmarking exercises are undertaken with selected higher education institutions and industry practices. Benchmarking enables the Department to identify gaps, adopt best practices, and align programme standards with national and international benchmarks. The findings from these exercises are subsequently presented and deliberated in the Department's Academic Management Meeting, where appropriate strategies and actions are formulated. The outcomes of these discussions directly inform Continuous Quality Improvement (CQI) initiatives, thereby strengthening programme sustainability, competitiveness, and responsiveness to emerging educational and industrial trends.

Benchmarking is recognised as a systematic process of identifying and adopting the best practices and performance standards. Its objective is not only to highlight areas for improvement but also to provide measurable indicators that guide evidence-based decision-making. At PSA, benchmarking outcomes contribute to curriculum refinement, teaching and learning innovation, student support services, and long-term programme sustainability. The detailed benchmarking report is provided in **Appendix C7-5a**.

C7- 6 Describe how the QMS of the IHL provides quality assurance covering (not limited to) the following:

System for Examination Regulations including Preparation and Moderation of Examination Papers: The programme has established a working system for examination regulations including preparation and moderation of examination papers. System of Assessment for Examinations, Projects, and Industrial Training: The programme has established a working system for assessment of examinations, projects, industrial training and other forms of learning delivery. The scope of assessment is wide enough to cover the achievement of PO.

S. The QMS of the IHL provides quality assurance

PSA has established a structured system for examination regulations, including the preparation and moderation of examination papers, as well as the assessment of examinations, projects, industrial training, and other learning activities. These systems are designed to ensure that the scope of assessment adequately measures the achievement of Programme Outcomes (PO). Procedures for preparing final examination papers are guided by ISO-certified processes and the assessment guidelines as provided in *Arahan-Arahan Peperiksaan dan Kaedah Penilaian* issued by JPPKK. The assessment framework encompasses continuous coursework, final examinations, final-year projects, and industrial training. Final examination questions are developed based on the Final Exam Item Specification Table (FEIST) and the approved DMP course syllabus.

At the departmental level, the Examination Committee oversees the preparation, moderation, and assessment of examination papers. Draft papers are first moderated internally against Programme Learning Outcomes (PLOs) and taxonomy levels before submission to JPPKK for further review. Assessment rubrics are applied to activities requiring subjective judgement to ensure consistency and fairness.

Quality assurance for assessment is maintained through both the Quality Management System (QMS) and the Integrated Educational Management System (IEMS). All related processes, procedures, and documentation are prepared in accordance with QMS and IEMS requirements. Supporting references, such as regulations, directives, and stakeholder guidelines, are also considered to strengthen implementation. At the polytechnic level, formal procedures for the preparation of final examination papers have been established. The process, coordinated by JPPKK, begins with the preparation of the FEIST, followed by the drafting and review of examination papers, the conduct of the examination, and finally the submission of results.

Institutions of Higher Learning (IHLs) are responsible for monitoring academic staff adherence to these work processes. To ensure reliability and fairness in assessment, moderation of both examination papers and answer scripts is conducted, reviewing the assessment items, marking schemes, and assessor judgements. The workflow for moderation is illustrated in **Figure C7-6a**.

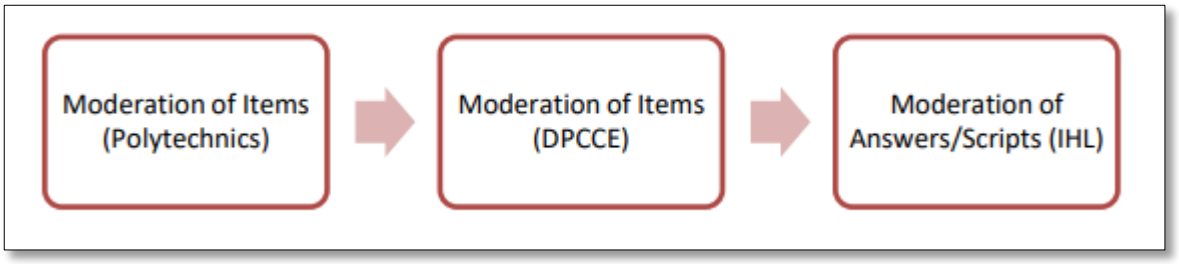

Figure C7-6a: Workflow of Moderation Process for Examination Papers

T. System for student admission and teaching and learning:
The programme has established a working system for student admission and teaching and learning.

The programme has a well-established system for student admission and for the management of teaching and learning activities. Student admission into polytechnics is centrally managed by the Student Admission Division, JPPKK, and is conducted twice annually, in February and August. The admission process follows national guidelines to ensure transparency, fairness, and alignment with entry requirements, thereby guaranteeing that students admitted possess the qualifications necessary to undertake the programme successfully.

Teaching and learning activities at PSA are conducted in accordance with MS ISO 21001:2018 Educational Organization Management System (EOMS) quality procedures, which serve as the institutional framework for ensuring effective educational delivery. Lecture and practical session plans are prepared in advance for every semester to provide structured, consistent, and outcome-based learning experiences. Students are required to attend all scheduled academic activities, as compulsory attendance is part of the quality assurance mechanism to enhance engagement and learning outcomes. Lecturers are responsible for preparing Course Outlines aligned with the syllabus and Programme Learning Outcomes (PLOs), and for maintaining updated Course Files to document lesson plans, teaching materials, assessments, and student performance.

In addition, continuous monitoring and evaluation are carried out through periodic academic reviews, student feedback, and departmental meetings. This systematic approach ensures that teaching and learning activities not only comply with prescribed standards but also support continuous quality improvement (CQI) in line with institutional, national, and industry expectations.

U. PSA Quality Assurance.

Quality assurance can be reflected through proper and sufficient policies/ rules/regulations/procedures in the Department/Faculty or IHL, and whether those systems are implemented.

Quality assurance at Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) is embedded within the institution's governance and academic culture to ensure that all processes, services, and academic programmes meet established standards and stakeholder expectations. The Quality Management System (QMS) provides a structured framework for planning, implementing, monitoring, and evaluating institutional activities. This system ensures that services delivered are consistent, effective, and aligned with customer and stakeholder needs. PSA adopts the principle of Continuous Quality Improvement (CQI), where processes and outputs are regularly monitored, measured, and reviewed to identify areas for enhancement.

To operationalize QA, PSA has established an Internal Audit Unit, which functions to coordinate, monitor, and evaluate the implementation of QMS across departments. This unit ensures compliance with internal policies as well as external accreditation and regulatory requirements. Quality practices are supported by Standard Operating Procedures (SOPs) that standardize implementation, promote accountability, and provide clear guidance for staff. In addition, regular internal audits, management reviews, and external audits are conducted to verify compliance and effectiveness. At the academic level, QA is further reflected through curriculum review cycles, student assessment moderation, teaching and learning monitoring, and stakeholder feedback mechanisms. Collectively, these measures ensure that PSA maintains high educational standards, addresses stakeholder needs, and upholds the integrity and sustainability of its programmes.

C7- 7 Describe the management system for safety, health and environment.

Safety and Health (OSH) Management through the **Unit Pengurusan Keselamatan dan Kesihatan Pekerjaan (UPKES)**, ensuring that faculty, staff, and students have a safe and healthy environment for work and study. To support this, an OSH management team has been formally established by the top management in collaboration with the Department of Occupational Safety and Health (DOSH). In recognition of its structured approach, PSA has been certified with the **ISO 45001:2015 standard** since November 2020. The organizational structure of UPKES, which illustrates the hierarchy and responsibilities in managing OSH at PSA, is shown in **Figure C7-7a**.

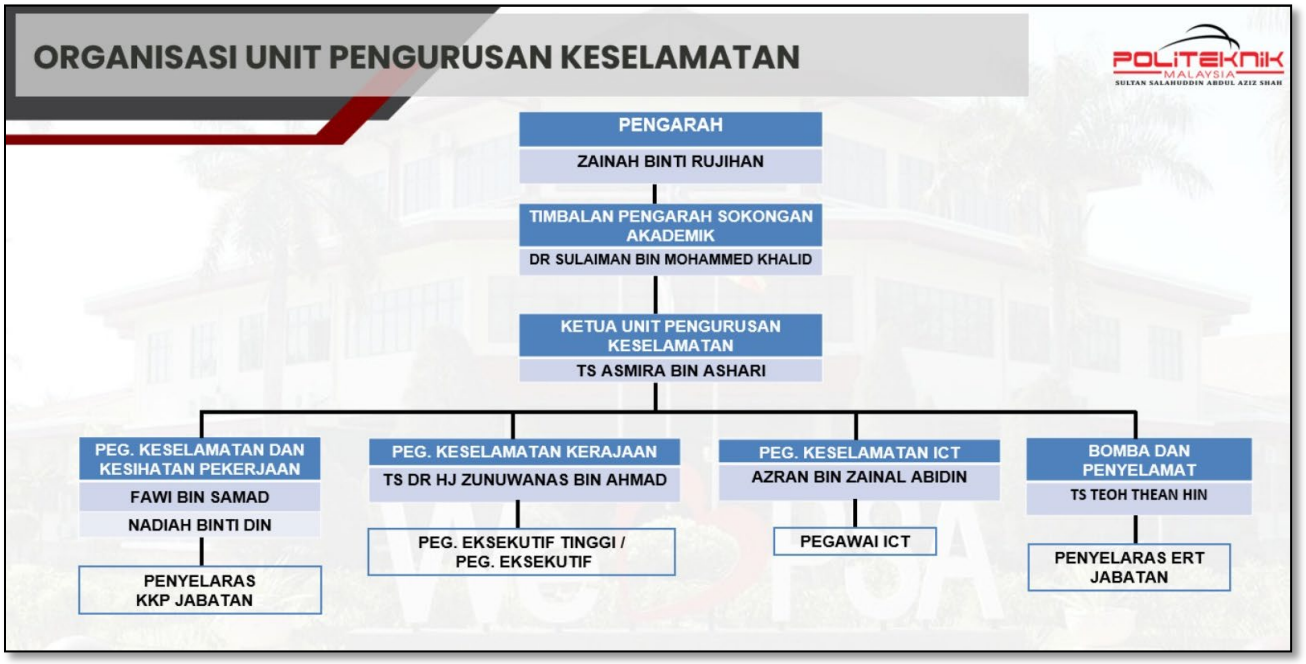

Figure C7-7a: Organizational Chart of UPKES

The UPKES management team is responsible for creating a set of policies that outline responsibilities, activities, and assessment of performance with respect to safety, health and environmental goals shown in **Table C7-7a**. It is part of the overall management of PSA that addresses hazards and risks associated with its activities.

No.	Activity	Date
1	Taklimat Keselamatan dan Kesihatan Pekerjaan bersama Pekerja Kebersihan dan Lanskap	5 Feb 2025
2	Latihan Pengungsian Bangunan Kolej Kediaman	12 Feb 2025
3	Latihan Pengungsian Bangunan JKA (26 Feb 2025)	26 Feb 2025
4	Latihan Pengungsian Bangunan Bangunan Pengurusan Fasiliti	27 Feb 2025
5	Poster Keselamatan Pejabat Semasa Cuti Perayaan	24 Mac 2025
6	Taklimat UKKP Pelajar Baru Sesi 1 2025/2026	30 Julai 2025

Table C7-7a: List of activities on safety, health and environment which have been conducted in PSA with the involvement of students and staff.

The PSA OSH team is also responsible for creating OSH units in every department to assist in the creation of an accident-free and eco-friendly campus. The organization chart of the OSH unit at Department of Mechanical Engineering is illustrated in **Appendix C7-7a**. All OSH activities from JKM department are aligned with the PSA UPKES to comply with the requirement stated in the standard.

The emergency Response Team (ERT) unit is also formed to aid faculty and students in the case of an emergency. The ERT Unit is a support unit for emergency cases for the OSH unit under the Department of Mechanical Engineering. The overall objective of ERT unit is to ensure the effective management of emergency efforts involved in preparing for and responding to situations associated with emergencies.

These include:

a. Activating the emergency communications system;
b. Establishing priorities;
c. Managing and coordinating emergency operations;
d. Coordinating and maintaining liaison with local, state and federal agencies;
e. Requesting and allocating resources to deal with the crisis;
f. Collecting, evaluating, and disseminating situational and damaging information and other essential data;
g. Responding to requests for resources and support; and
h. Restoring essential services

PSA, an educational institution of Malaysia Government is determined to ensure all activities are conducted in a safe and healthy environment. To implement this policy, PSA will:

a. Ensure compliance with all rules and regulations related to Occupational, Safety and Health.
b. Establish an efficient and effective safety and health management system.
c. Prevent accidents and hazards for all customers and employees by providing a safe environment.
d. Ensure continuous improvement of the management system and implementation of operations with the full involvement of employees, customers, and stakeholders through consultation, training, and continuous education.
e. The policy is constantly monitored and reviewed to align with legal requirements and organizational needs, and this is achieved through the commitment of all parties involved. The policy is constantly monitored and reviewed in line with legal requirements and organization and this is realized through the commitment of all parties.

C7- 8 Describe CQI strategies to be implemented in relation to QMS

PSA is SIRIM MS ISO 21001:2018 Educational Organizations Management Systems (EOMS) certified in 2022 which requires undergoing surveillance audit once every year and recertification audit once in every three years. In addition, the Quality Management Team as in **Figure C7-8a** also conducts internal auditing to ensure the process of teaching and learning as well as the management of IHL are implemented according to the MS ISO procedures.

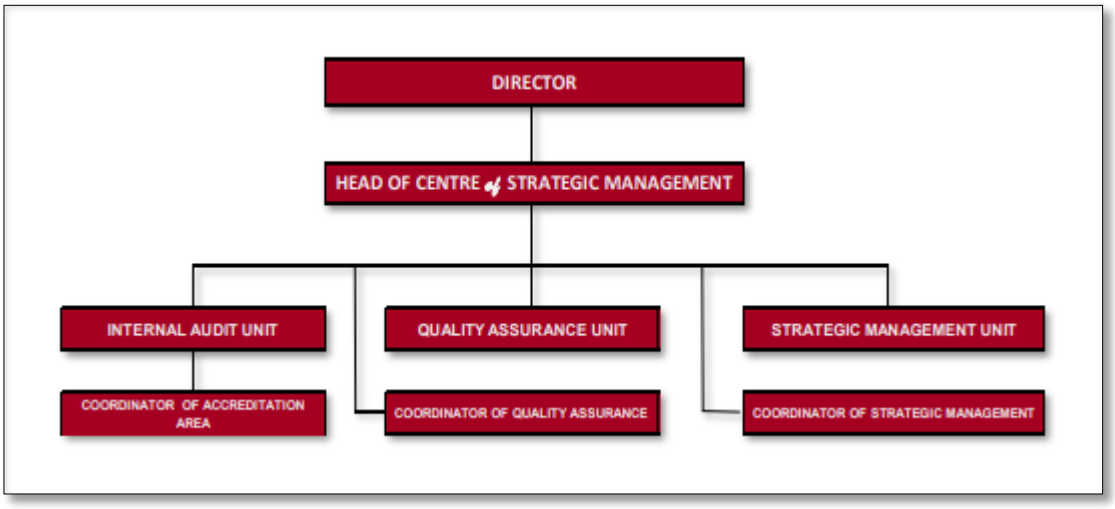

Figure C7-8a: Unit Quality Management Committee

In order to achieve PSA's mission and vision, the departments and units have developed quality objectives for
every major process and function. The quality objectives are based on the key performance indicators (KPIs). The guiding principles in establishing KPIs are among others the Malaysian Education Blueprint (Higher Educ ation) and the Polytechnic Transformation Plan produced by MoHE. Programmes offered at PSA are

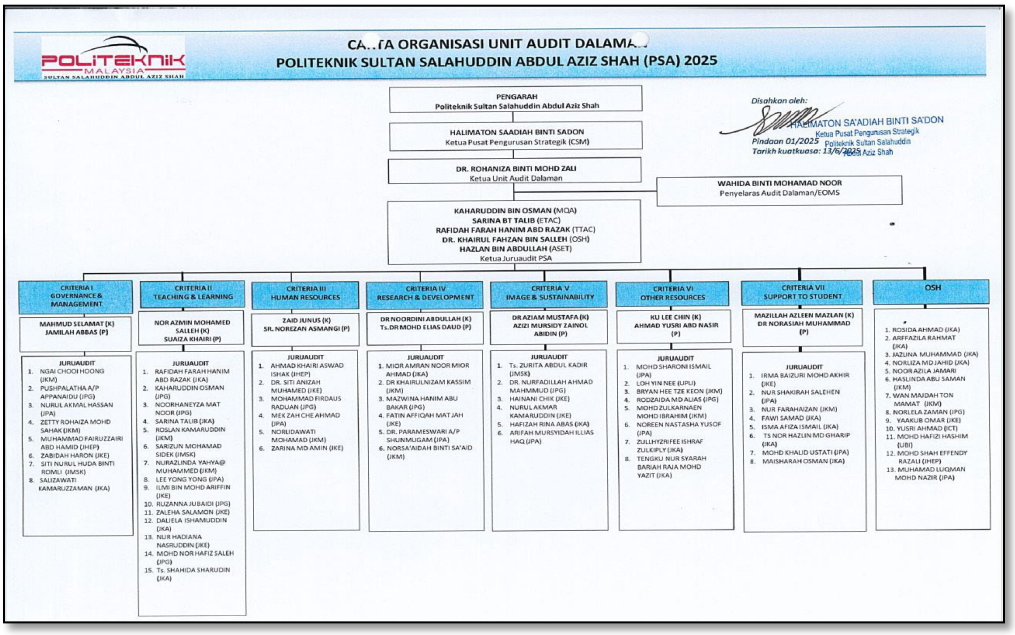

Figure C7-8b: Organizational Chart of the Internal Audit Unit of PSA

accredited by external examiners in order to fulfil the requirements set by the ETAC and Malaysian Qualifications Agency (MQA). Internal Quality Audits (IQAs) are conducted towards sustaining the quality of the programmes to make sure it is at par with the latest developments in technologies used in industries. The organisation chart of the Internal Audit Unit of PSA is shown in **Figure C7-8b**.

The findings of IQA will be presented during meetings plat forms as listed in **Table C7-8a**.

NO	Committee	Frequency of Meeting
1.	Management Review Meeting	Once a year
2.	Management Meeting	Monthly
3.	Academic Meeting	Twice a year

Table C7-8a: Types of Meetings

In order to maintain the quality of DMP programme in all criteria, the CQI of the programme is done by considering all aspects based on feedback and outcome not only from alumni and the Industrial Advisory Committee (IAC) meeting with industry but also mainly based on feedback from MRM meeting, management meeting as well as academic meeting at JKM and PSA level.

ISO 45001:2018 - Occupational Safety and Health (OSH)

Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) has successfully completed the Lloyd's Register Quality Assurance (LRQA) audit for ISO 45001:2018, maintaining its certification from 2020 to the present, with renewal scheduled for 2025. Achieving ISO 45001:2018 certification underscores PSA's unwavering commitment to occupational safety and health (OSH). Rigorous measures were undertaken to meet the stringent requirements set by LRQA, an internationally recognized authority responsible for auditing compliance with OSH standards. Adherence to these standards not only reflects PSA's dedication to providing a safe and healthy working environment but also demonstrates its continuous compliance with international benchmarks for occupational safety and health. The certification further affirms PSA's commitment to delivering high-quality services to all stakeholders.

In its pursuit of excellence in OSH management, PSA's top management has established a dedicated OSH management team in accordance with the principles of ISO 45001:2018. A special unit, known as the Unit Pengurusan Keselamatan dan Kesihatan Pekerjaan (UPKES), has been formed to enforce and oversee the implementation of occupational safety and health policies across the institution. The UPKES unit is entrusted with fostering a secure and healthy environment for departments, staff, and students. Its establishment reflects PSA's proactive approach in safeguarding the well-being of its academic community and promoting a conducive environment for both work and study. To ensure comprehensive OSH implementation, each department has appointed a designated officer responsible for coordinating UKKP activities within the department, serving as the key liaison to facilitate effective safety and health management at the departmental level.

ISO/IEC 17025

ISO/IEC 17025 defines the general requirements for the competence of testing and calibration laboratories and is widely recognized as the standard for ensuring technical proficiency. Accreditation under ISO/IEC 17025 demonstrates that a laboratory is capable of producing reliable and accurate results, and Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA) is among the institutions that have successfully obtained this recognition. This accreditation coincides with PSA being one of three Premier Polytechnics entrusted with establishing a Centre of Excellence in Technology (CMET) in selected niche areas. In line with the polytechnic transformation agenda, PSA has developed CMET in the field of Medical Electronics. The CMET aims to serve as a leading centre for technical and vocational education and training (TVET). Its vision is to emerge as a national centre of excellence, achieving high standards in Medical Electronics and supporting the development of skilled professionals for the industry. This is achieved through collaboration, research and development, publications and excellent teaching and learning. As part of the PSA mission statement, CMET hopes to be a catalyst to contribute towards achieving the country's goal of becoming a high-income nation and leader in Technical Vocational Education and Training (TVET).

To be certified with ISO/IEC 17025, accredited by Department of Standards Malaysia, Laboratory accreditation bodies use the ISO 17025 standard specifically to assess factors relevant to a laboratory's ability to produce precise, accurate test and calibration data; including:

a. Traceability of measurements and calibrations to national standards
b. Technical competence of staff
c. Maintenance of test equipment
d. Quality assurance of test and calibration data

e. Validity and appropriateness of test methods
f. handling and transportation of test items appropriately and
g. maintaining the Quality of the test environment and sampling

By having the certification, it proves that the staffs have sound technical knowledge and skills to carry out calibration jobs using well maintain equipment using valid and appropriate test methods. These activities help staffs involved to enhance their knowledge and skills in order to be accredited.

C7- 9 Self-assess on programme performance related to QMS.

Self-assessment on programme performance constitutes a fundamental component of quality management in educational institutions. At PSA, this exercise is conducted annually to evaluate the extent to which academic programmes adhere to QMS requirements and the ISO 21001:2018 Education Organization Management System (EOMS). ISO 21001:2018 establishes a comprehensive framework for education providers to manage processes that influence learner outcomes, stakeholder satisfaction, and overall institutional effectiveness. Through this systematic self-assessment, the department critically examines curriculum delivery, teaching and learning practices, student assessment, and graduate competencies to ensure alignment with institutional objectives and the PSA Action Plan KPIs, with reference to the *KAMUS KPI POLYCC*.

The self-assessment process is closely integrated with the PSA Action Plan, which defines annual academic and operational targets. Programme performance is rigorously measured against clearly defined Key Performance Indicators (KPIs), ensuring that objectives pertaining to student learning outcomes, graduate employability, and industry relevance are effectively achieved. By leveraging the KPI framework provided by POLYCC, the department can monitor trends, identify performance gaps, and benchmark achievements against national and institutional standards. This alignment ensures that continuous improvement initiatives are evidence-based, targeted, and fully compliant with the requirements of ISO 21001:2018.

Through this self-assessment, the department evaluates compliance with documented procedures, internal audit results, and corrective and preventive actions mandated under ISO-based QMS and EOMS standards. The review encompasses teaching methodologies, learning resources, assessment strategies, and student support mechanisms. Outcomes of the self-assessment provide a clear understanding of programme strengths and areas requiring enhancement, fostering a culture of evidence-informed decision-making and continuous quality improvement. Crucially, this process ensures that academic programmes remain responsive to industry needs, national TVET policies, and evolving stakeholder expectations, while maintaining a strong focus on learner satisfaction and graduate competence.

Overall, the self-assessment process under ISO 21001:2018 not only ensures adherence to international quality standards but also functions as a strategic instrument for driving academic excellence. It generates actionable insights that inform curriculum development, faculty development, and resource allocation, ultimately enhancing the learning experience and outcomes for students. By systematically linking programme performance to KPIs, the PSA Action Plan, and ISO/EOMS requirements, the department demonstrates accountability, transparency, and an unwavering commitment to continuous improvement, in accordance with both national and international education quality benchmarks.