



KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI



GRADUATE ACHIEVEMENT AND STAKEHOLDER PERSPECTIVES ON PROGRAMME EDUCATIONAL OBJECTIVES: COHORT 2021

DIPLOMA IN ELECTRONIC ENGINEERING (COMPUTER)-DTK

ELECTRICAL ENGINEERING DEPARTMENT POLITEKNIK PORT DICKSON

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PREFACE

This report presents a study on Graduate Achievement and Stakeholder Perspectives on Programme Educational Objectives (PEO) for the 2021 Cohort Diploma in Electronic Engineering (Computer) - DTK. It is intended to document the extent to which programme graduates have achieved the intended educational objectives, as assessed through both quantitative and qualitative feedback from key stakeholders.

This report also provides the methodology, data analysis, findings, and recommendations that are essential in supporting continuous quality improvement of the programme. This report is organized into six main sections.

Section 1 introduces the study, covering the programme information, synopsis, and the Programme Educational Objectives (PEO) that form the basis of this evaluation.

Section 2 explains the PEO Achievement Measurement Process, including the achievement indicators, assessment instruments, and study design used to evaluate each of the four PEOs.

Section 3 presents the Results and Analysis, covering findings from the questionnaire method and respondent interview protocol, stakeholder feedback on each PEO, and the determination of the overall PEO achievement percentage for the 2021 Cohort.

Section 4 discusses the Discussion and Conclusion drawn from the study, summarizing key insights and their implications for the programme.

Section 5 lists the References used to support this study.

Section 6 contains the Report Verification, confirming the authenticity and accuracy of the findings presented.

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1.0 INTRODUCTION

1.1 Introduction

The Engineering Technology Accreditation Council (ETAC) is a professional body responsible for all engineering programs in Malaysia, the offering institution is required to implement the Outcome-Based Education or the OBE system. The OBE is an educational process which is based on trying to achieve certain specified outcomes in terms of individual student learning. Thus, having decided what are the key things students should understand and be able to do or the qualities they should develop, both structures and curricula are designed to achieve those capabilities or qualities. The designing process involves restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of high order learning and mastery rather than accumulation of course credits.

In general, the OBE assessment includes three types of outcomes/objectives:

- 1) The Course Learning Outcome (CLO) - being assessed during semester
- 2) The Programme Learning Outcome (PLO) - being assessed at the end of their four-year study and
- 3) The Program Educational Objectives (PEO) - being assessed after 3-5 years of their graduation date.

The PEO are specific goals consistent with the mission and vision of the expressed interest of programme stakeholders describing expected achievements of graduates in their career and professional life after graduation. Criteria of good PEOs are such as distinctive, specific, measurable, achievable, result oriented and having a time frame.

Vision and Mission

Department of Polytechnic and Community College Education (DPCCE) Vision Statement:

To be the Leading-Edge TVET Institution

DPCCE Mission Statement:

- 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 partnerships with stakeholders

Port Dickson Polytechnic (PPD) Vision

To be a towering TVET institution globally.

PPD Mission

- 1) Producing quality, holistic and well-balanced TVET graduates with entrepreneurship in order to fulfil the needs of the nation.
- 2) Developing and sustaining smart partnerships with relevant parties locally and internationally.
- 3) To benefit society through education, research and innovation.

PPD Mission Statement

- 1) To produce quality, holistic, and well-balanced TVET graduates with entrepreneurship to fulfil the needs of the nation.
- 2) To develop and sustain smart partnerships with relevant parties locally and internationally.
- 3) To benefit society through education, research and innovation.

The relationship between the PPD mission and the DPCCE mission is depicted in Table 1.1.

Table 1.1: Relation between PPD Missions and DPCCE Missions

DPCCE Mission		PPD Mission		
		Quality, holistic, and well-balanced TVET graduates with entrepreneurship	Develop and sustain smart partnerships with relevant parties locally and internationally	Benefit society through education, Research and innovation
1	To provide wide access to quality and recognized TVET programmes.			√

DPCCE Mission		PPD Mission		
		Quality, holistic, and well-balanced TVET graduates with entrepreneurship	Develop and sustain smart partnerships with relevant parties locally and internationally	Benefit society through education, Research and innovation
2	To empower communities through lifelong learning			√
3	To develop holistic, entrepreneurial, and balanced graduates	√		
4	To capitalize on a smart partnership with stakeholders		√	

1.2 Programme Information

Electrical engineering is the field of study which generally deals with the application of electrical and electronics towards designing, testing and development of circuitry and equipment for well-defined engineering activities. It requires the application of scientific and engineering knowledge and methods combined with practical skills in supporting well-defined engineering activities to prepare students for their future role in the industry.

The electrical engineering diploma graduates of the Polytechnic's Ministry of Higher Education are exposed to a comprehensive curriculum consisting of courses in personal development, mathematics, science, electrical disciplines and workplace competencies requirements. Graduates of the electrical engineering diploma programme will be equipped with specialized knowledge and skills which include power engineering, green technology, energy efficiency, computer technology, communication, medical electronics, optoelectronic and industrial automation.

The Diploma in Electronic Engineering (Computer) (DTK) is a three-year full-time programme comprising of five semesters coursework with one full semester of industrial training.

1.2.1 Synopsis

The DTK programme is design to covers broad discipline of electrical engineering, with specialization emphasis on the field of green energy. The broad based electrical engineering which includes electrical and electronic principle, computer fundamentals and programming, semiconductor devices, electrical wiring, power system and computer aided design provides versatility to the graduates. Towards the end of the programme, students are equipped with specialization courses which include Fundamental of Renewable Energy, Green Energy System, Energy Efficiency and Management and Green Energy System Integration.

1.3 Programme Educational Objectives

The PEO are statements that describe the expected achievements of graduates in their careers and professional life within three to five years after graduation. Table 1.2 shows the PEOs curriculum version for June 2014, June 2019 and 2024. The measurement of PEOs in this study is based on the PEO 2019 curriculum version, which serves as the reference framework for evaluating graduate achievement in relation to career and professional development outcomes after graduation.

Each PEO for the DTK programme is designed with clearly defined performance indicators that align with the PLOs. These indicators serve as measurable elements that reflect the intended achievements of graduates within 3-5 years after completing the programme. The alignment between PEOs and PLOs ensures that the programme outcomes translate effectively into long-term graduate success, encompassing technical competence, societal contribution, entrepreneurship, and continuous professional development.

Table 1.2: PEOs Description

PEO version June 2014	PEO version June 2019	PEO version 2024	Indicator / Variable measured	Description
PEO 1: Knowledgeable and technically competent in electrical and electronic discipline and able to adapt themselves with new technological challenges in electrical and electronic contribute effectively as a team member with the capability of being a leader	PEO 1: Practicing technician in electrical engineering-related field	PEO 1: Practicing technician in electrical engineering-related field	Technician in the Electrical and Electronic field	Describes a technician who works in any industry and has a job function in the electrical or electronic discipline.
PEO 2: Effective in communication and contribute effectively as a team member with the capability of being a leader	PEO 2: Contributing to society with professional ethics and responsibilities	PEO 2: Contributing to society with professional ethics and responsibilities	Role of graduates	Describes the graduate's involvement in community activities, which includes engineering and non-engineering work related to society, health, and safety. During the activities, the graduate instils awareness of the safety and health culture and suggests environmental and environmental sustainability solutions to the community. In performing the activities, the graduates adhere to professional ethics and responsibilities by following the rules and regulations of the field.

PEO version June 2014	PEO version June 2019	PEO version 2024	Indicator / Variable measured	Description
PEO 3: Capable to solve electrical and electronic problems innovatively, creatively and ethically with social responsibility towards developing country and community	PEO 3: Engaging in enterprising activities that apply engineering knowledge and technical skills	PEO 3: Engaging in enterprising activities that apply engineering knowledge and technical skills	Enterprising Activities	Describes the enterprising activities that require effective communication and contribution from a team member. Enterprising activities involve business in engineering, research, and development (R&D), and technical projects. Enterprising activities can be online or offline businesses. They can also be pursued full-time or part-time.
PEO 4: Able to demonstrate entrepreneurship skills and recognize the needs of life-long learning for successful career advancement	PEO 4: Engaging in activities to enhance knowledge for successful career advancement	PEO 4: Engaging in continuous professional development in response to technological and social challenges.	Career Advancement	Continuous Professional Development (CPD) refers to the ongoing process of acquiring new knowledge, skills, and competencies to stay relevant in an ever-evolving world. As technology advances and societal expectations shift. Students must adapt to remain competitive and effective in their fields.

The relationship between each PEO, its corresponding PLOs, and the key area of assessment is summarised in Table 1.3. This mapping serves as a fundamental reference in assessing the extent to which the programme has successfully produced well-rounded graduates, while also supporting curriculum improvement through feedback integration and stakeholder engagement.

Table 1. 3: PEO-PLO Mapping and Indicators

PEO	Indicator Measured	Assessment Focus
PEO 1	PLO1 – PLO5	Application of engineering knowledge, problem solving, design solutions, investigations, and use of modern engineering tools in the E&E field
PEO 2	PLO6 – PLO8	Professional ethics, societal responsibility, safety, legal awareness, and sustainability considerations in engineering practice
PEO 3	PLO9-PLO 11	Teamwork, communication, leadership, engineering management, and involvement in technical/entrepreneurial activities
PEO 4	PLO12	Lifelong learning through further studies, professional certification, and continuous career development

PEO 1 focuses on the application of engineering knowledge and technical competencies in the Electrical and Electronic (E&E) field. It is mapped to PLO1 to PLO5, which cover engineering knowledge, problem analysis, design/development of solutions, investigation skills, and the use of modern engineering tools. The main assessment focus for this PEO is the graduates' ability to apply technical knowledge effectively in industry practice, particularly in solving engineering problems and performing technical tasks.

PEO 2 emphasizes graduates' ability to demonstrate professional ethics, social responsibility, and awareness of sustainability in engineering practice. It is linked to PLO6 to PLO8, which include understanding societal, health, safety, legal, and cultural issues, evaluating sustainability impacts, and demonstrating ethical responsibilities. The assessment of this PEO focuses on graduates' behaviour in relation to ethical practice, safety compliance, and contribution to sustainable engineering solutions.

PEO 3 highlights graduates' capabilities in teamwork, communication, leadership, and engineering management. This PEO is mapped to PLO9 to PLO11, which cover effective functioning as an individual and team member, effective communication in engineering activities, and application of engineering management principles. The performance indicators include participation in team-based projects, communication effectiveness, leadership roles, and involvement in technical or entrepreneurial activities.

PEO 4 emphasizes continuous professional development and lifelong learning. It is aligned with PLO12, which focuses on the ability to engage in independent and continuous learning in specialized technical knowledge. The assessment criteria for this PEO include further education, attainment of professional certifications, and career progression such as promotions or advancement into senior technical roles.

2.0 PEO ACHIEVEMENT MEASUREMENT PROCESS

PEOs are broad statements that describe the expected career and professional accomplishments of graduates after completing an academic programme. They are formulated to align with the institution's vision and mission while addressing the needs and expectations of industry, society, and national educational aspirations. PEOs are crucial in ensuring that education in a country does not solely focus on theory but also prepares graduates to face the realities of their professional careers. With proper implementation of PEOs, a country can develop a more effective, relevant, and highly competitive educational system. Therefore, the PEO measurement process needs to be carried out by collecting data from alumni, industry and relevant stakeholders. The measurement data, along with triangulation processes, are used to enhance the quality of education so that it aligns more closely with the demands of the job market. A well-executed PEO measurement process helps ensure that graduates possess skills that meet the needs of the current era.

2.1 Introduction

The PEO achievement measurement process is conducted for alumni of the Department of Electrical Engineering, Politeknik Malaysia, who have graduated within the past 3 to 5 years. The process begins with the identification of PEO achievement indicators. These indicators encompass career success and personal development. Subsequently, data is collected through surveys conducted among alumni. The data is then analysed and evaluated to determine the effectiveness of the programme. Follow-up actions include a triangulation process, which involves presenting the PEO achievement analysis to stakeholders such as the Industry Advisory Panel (IAP) and alumni. Finally, reporting and documentation are carried out as part of the quality management and accreditation process. This systematic approach ensures that the academic programme remains relevant and effective in achieving its long-term educational objectives.

2.2 PEO Achievement Indicators

In this context, recommendations from the program's industrial advisors and alumni to improve the PEOs are highly relevant and timely. They aim to enhance the quality of education and strengthen graduates' capabilities in the electrical engineering industry.

These criteria are developed through consultations with industry stakeholders, alumni and the Programme Advisory Committee (PAC), while remaining aligned with national accreditation standards and the principles of OBE. The recommendations from the IAP and alumni regarding the Key Performance Indicator (KPI) for PEOs achievement were discussed and presented in joint meetings on May 5, 2026 (cohort 2021), where a final decision on the targets was established. The results of the discussions and consultations determined that the achievement percentage would serve as a benchmark for evaluating and measuring the success of the PEOs in future cohorts.

Each PEO is assigned a target percentage that represents the minimum level of success expected for the cohort. A PEO is considered achieved when the percentage of graduates meeting the defined expectations equals or exceeds the set target. These criteria are not only used to assess the effectiveness of the programme in preparing graduates for the workforce and lifelong learning, but also to support continuous quality improvement efforts in curriculum development.

Additionally, setting targets provides an opportunity to enhance assessment methods by focusing on objective long-term measurements. This ensures that every decision made over time is based on strong, accurate, and accountable data. This strategy is essential to ensure that the PEO program progresses consistently toward more effective and sustainable goal achievement. More detailed information on the KPI percentage for the 2021 Cohort can be found in Table 2.1, serving as a critical guideline for continuous improvement in Polytechnic academic programs and future graduate success.

Table 2.1: Target KPI for PEOs for Cohort 2021

PEO	Statement	% Target KPI
		2021 Cohort
PEO 1	practicing technician in electrical engineering related field	> 50
PEO 2	contributing to society with professional ethic and responsibilities	> 65

PEO 3	engaging in enterprising activities that apply engineering knowledge and technical skills	> 40
PEO 4	engaging in activities to enhance knowledge for successful career advancements	> 45

2.3 Assessment Instruments

The assessment of PEOs for the DTK programme is conducted systematically to determine the level of achievement among graduates. Each PEO was associated with specific performance indicators and assessed using a set of structured instruments, including alumni questionnaires, employer feedback forms, and triangulation during advisory panel discussions. The aim was to evaluate how well the graduates met the intended objectives based on set performance targets.

Questionnaire instruments are used to obtain data to answer the following objectives:

- i. Addressing curriculum feedback requirements in terms of improving PEO program achievement.
- ii. Discuss how to calculate the percentage of PEO achievement targets that match ETAC Criterion 1.
- iii. Discusses programme improvement and planning in terms of enhancing PEO, PLO, Graduate Employability, and Graduate on Time accomplishment for their respective programmes.

Once finalized, the survey instrument was distributed to the target respondents' students who graduated in the 2021 cohort. The measurement process was conducted from Feb 7, 2026 to Feb 28, 2026. The instrument was distributed online using the Google Form platform to ensure easy access, a high response rate, and more efficient data processing. During this period, students were briefed on the purpose of the study and the importance of their participation in the programme quality evaluation process. Periodic reminders were also sent to encourage participation. This step was crucial in ensuring the reliability of the data collected before the data analysis and PEO achievement reporting process was conducted.

2.4 Study Design

This study adopts a quantitative, survey-based research design to evaluate the achievement of PEOs among graduates of the Department of Electrical Engineering at Malaysian Polytechnics. The design focuses on collecting empirical data from alumni who graduated within three to five years, as well as input from employers and other relevant stakeholders. The primary instrument used is a structured questionnaire consisting of items aligned with each PEO, designed to assess various aspects such as work in field (PEO 1), role of graduates (PEO 2), enterprising activities, research and development, R&D (PEO 3), and activities enhancing knowledge (PEO 4). The study involves a two-phase distribution process, followed by systematic data analysis to identify trends, evaluate programme effectiveness, and support continuous quality improvement (CQI). This design ensures a reliable and valid approach to measuring long-term educational outcomes and graduate performance in alignment with institutional goals.

2.4.1 PEO 1: Practicing technician in electrical engineering-related field

The measurement of PEO 1 as illustrated in the flowchart in the Figure 2.1 is based on the responses to Item 1 until Item 3 as described below:

- Item 1: Are you working/have you ever worked in an electrical/electronic engineering related field ?
- Item 2: Have you ever applied/ practised any electrical/electronic knowledge in your job scope ?
- Item 3: Are you able to perform technical tasks in the field of electrical/electronic engineering effectively ?

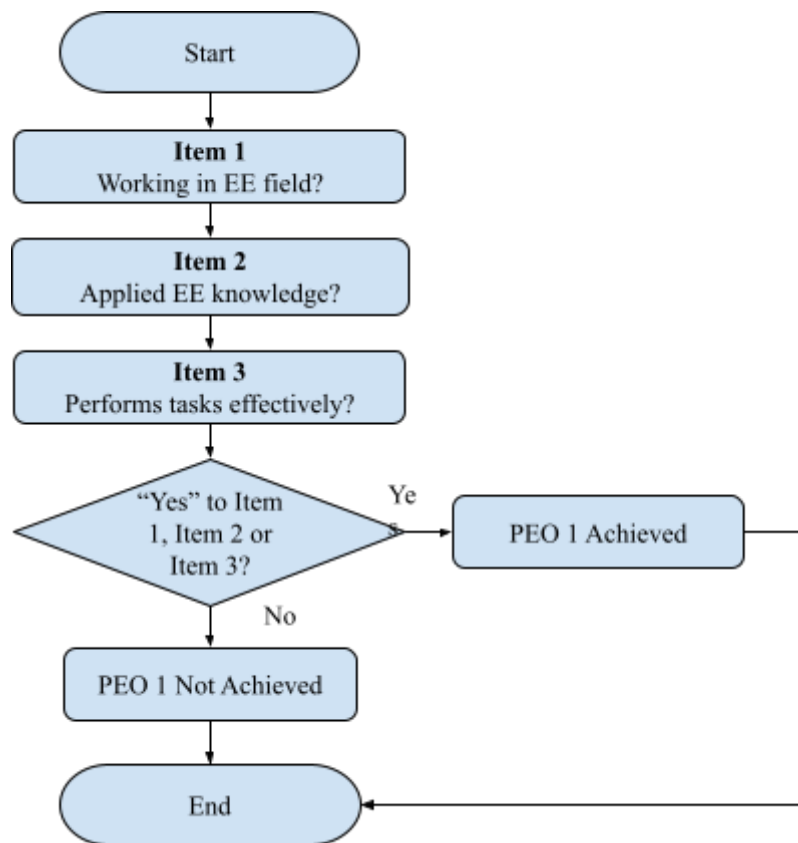


Figure 2.1: Flowchart Measurement of PEO 1

The measurement of PEO 1 is based on responses to three items. Item 1 asks whether the respondent is currently employed or has previously worked in a field related to electrical or electronic engineering. Item 2 asks whether they apply electrical or electronic knowledge within their current job scope. Item 3 asks whether they are able to perform technical tasks in the field of electrical or electronic engineering effectively.

A graduate is considered to have achieved PEO 1 if they answer "Yes" to at least one of the three items. This OR-based logic ensures that graduates who may not be directly employed in an engineering role, but still utilise their technical knowledge in their work, are duly recognised. For instance, as illustrated in Table 2.2, a respondent who answered "No" to Item 1 but "Yes" to both Item 2 and Item 3 is still classified as having achieved PEO 1, reflecting the inclusive nature of this evaluation approach.

Table 2.2: Example Respondent Combination and PEO 1 outcome

Respondent	Item 1	Item 2	Item 3	PEO 1 Outcome
Respondent 1	Yes	Yes	Yes	Achieved
Respondent 2	Yes	No	No	Achieved
Respondent 3	No	Yes	No	Achieved
Respondent 4	No	Yes	Yes	Achieved
Respondent 5	No	No	Yes	Achieved
Respondent 6	No	No	No	Not Achieved

2.4.2 PEO 2: Contributing to society with professional ethic and responsibilities

The measurement of PEO 2 as illustrated in the flowchart in the Figure 2.2 is based on the responses to Item 1 until Item 3 as described below:

Item 1: Are you practise ethical conduct and professional responsibility when working in a team at an educational institution or in the workplace?

Item 2: Are you a member of any professional body or international society or regulatory body (e.g: BEM/ MBOT/ IEEE / IEM/ MySet/ CIDB/NIOSH)?

Item 3: Have you ever involved in any community or social activities (e.g: communal work / Corporate Social Responsibility activities / social work / NGOs)?

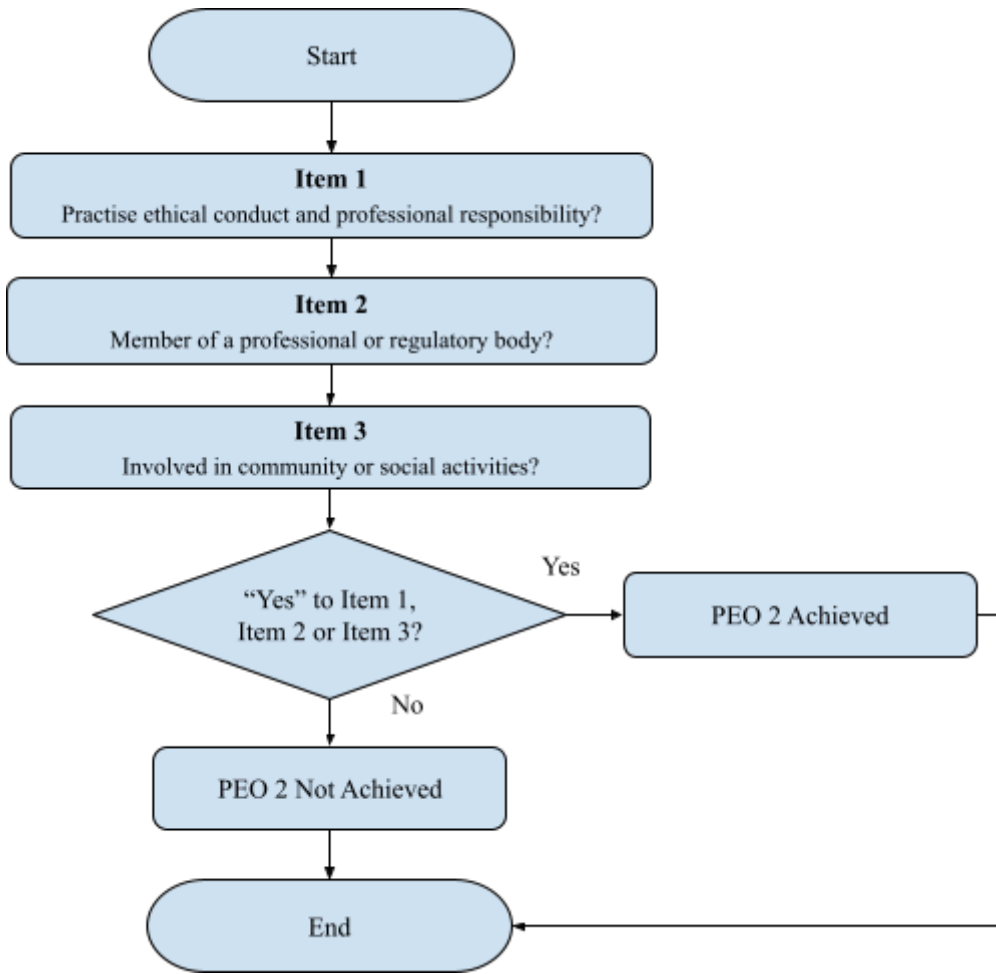


Figure 2.2: Flowchart Measurement of PEO 2

The measurement of PEO 2, which evaluates the role of graduates in their professional and societal contributions, is based on responses to three different items. A graduate is considered to have achieved PEO 2 if they answer "Yes" to at least one of the three items. Each item represents a different dimension of graduate involvement including ethical practices (Item 1), professional membership (Item 2) and participation in community or social activities (Item 3).

Table 2.3: Example Respondent Combination and PEO 2 outcome

Respondent	Item 1	Item 2	Item 3	PEO 2 Outcome
Respondent 1	Yes	Yes	Yes	Achieved
Respondent 2	Yes	No	No	Achieved
Respondent 3	No	Yes	No	Achieved
Respondent 4	No	Yes	Yes	Achieved
Respondent 5	No	No	Yes	Achieved
Respondent 6	No	No	No	Not Achieved

The example Table 2.3 illustrates how different combinations of responses determine the outcome. For instance, Respondent 1 is counted under PEO 2 for answering “Yes” to all items, while Respondent 2 meets the criteria through “Yes” responses to Items 1 only. In contrast, Respondent 6, who answered “No” to all items, does not meet PEO 2 outcome achieved. This comprehensive approach ensures a broader assessment of graduate contributions beyond technical work, capturing elements of professionalism, ethics, leadership, and community involvement.

2.4.3 PEO 3: Engaging in enterprising activities that apply engineering knowledge and technical skills

The measurement of PEO 3, which focuses on graduates’ involvement in entrepreneurship, R&D, is based on responses to three key items, namely Item 1, Item 2, and Item 3 as described below:

- Item 1: Have you ever engaged in entrepreneurship activities in the field of electrical / electronic engineering, either full-time or part-time, online or offline?
- Item 2: Have you ever involved in research and development (R&D) of any product/service/system/technical project? (e.g. market research, product quality improvement, business innovation, process improvement, design)
- Item 3: Have you ever participated in seminars, conferences, workshops, or competitions promoting entrepreneurship/ research and development (R&D)/ innovation in the field of electrical / electronic engineering?

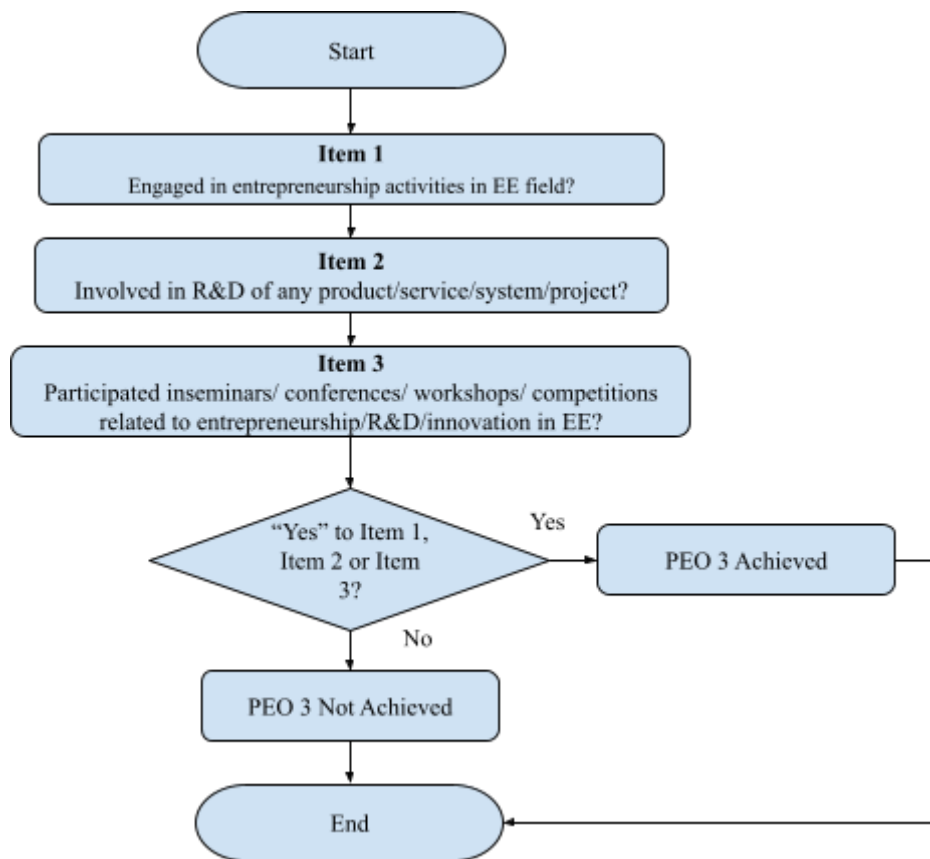


Figure 2.3: Flowchart Measurement of PEO 3

The measurement of PEO 3 is based on responses to three items. Item 1 asks whether the respondent is involved in any form of entrepreneurship activities in the field, either online or offline. Item 2 asks whether they are ever involved in R&D of any product/ service/ system/ project? Item 3 asks whether they participated in seminars/ conferences/ workshops/ competitions related to entrepreneurship, R&D or innovation in the EE field.

A graduate is considered to have achieved PEO 3 if they answer "Yes" to at least one of the three items. The decision logic is clearly shown in the flowchart in Figure 2.3, and the summary Table 2.4 at the bottom provides examples: Respondent 1 is counted achieved under PEO 3 by meeting all criteria, while Respondent 2 qualifies through Engaged in entrepreneurship activities in EE field (Item 1). Respondent 6 , who does not meet any path, is not counted as achieved. This structured approach ensures that graduates’ entrepreneurial and research contributions are accurately recognized whether through business ventures or innovation-driven activities.

Table 2.4: Example Respondent Combination and PEO 3 outcome

Respondent	Item 1	Item 2	Item 3	PEO 3 Outcome
Respondent 1	Yes	Yes	Yes	Achieved
Respondent 2	Yes	No	No	Achieved
Respondent 3	No	Yes	No	Achieved
Respondent 4	No	Yes	Yes	Achieved
Respondent 5	No	No	Yes	Achieved
Respondent 6	No	No	No	Not Achieved

2.4.4 PEO 4: Engaging in activities to enhance knowledge for successful career advancement

Figure 2.4 illustrates the measurement flowchart for PEO 4, which focuses on graduates' engagement in knowledge enhancement and career advancement activities. The measurement of PEO 4 is assessed through three items, where Items 1 and 2 are dichotomous (Yes/No) questions, while Item 3 employs a multiple-response format allowing respondents to select all applicable options. The item is as described below:

Item 1: Have you ever participated in any courses or activities to enhance your knowledge of new technology?

Item 2: Do you hold any professional certification?

Item 3: What are your achievements to date? (*You can select more than one answer option:)

Item 1 asks whether the graduate has ever participated in any courses or activities aimed at enhancing their knowledge of new technology. This item is designed to capture the graduate's commitment to continuous learning and self-improvement beyond formal education, which is a key indicator of lifelong learning behaviour. Item 2 asks whether the graduate currently holds any professional certification. Professional certification serves as tangible evidence that a graduate has pursued and attained a recognised standard of competency in their field, reflecting their commitment to professional development. Item 3 asks graduates to identify their achievements to date by selecting all applicable options from the following: salary increase, promotion, own business, further education, and not applicable. A multiple-response format is adopted for this item because graduate achievements are not mutually exclusive — a respondent may have simultaneously received a promotion and

pursued further education. Restricting the response to a single choice would underrepresent the breadth of graduate accomplishments.

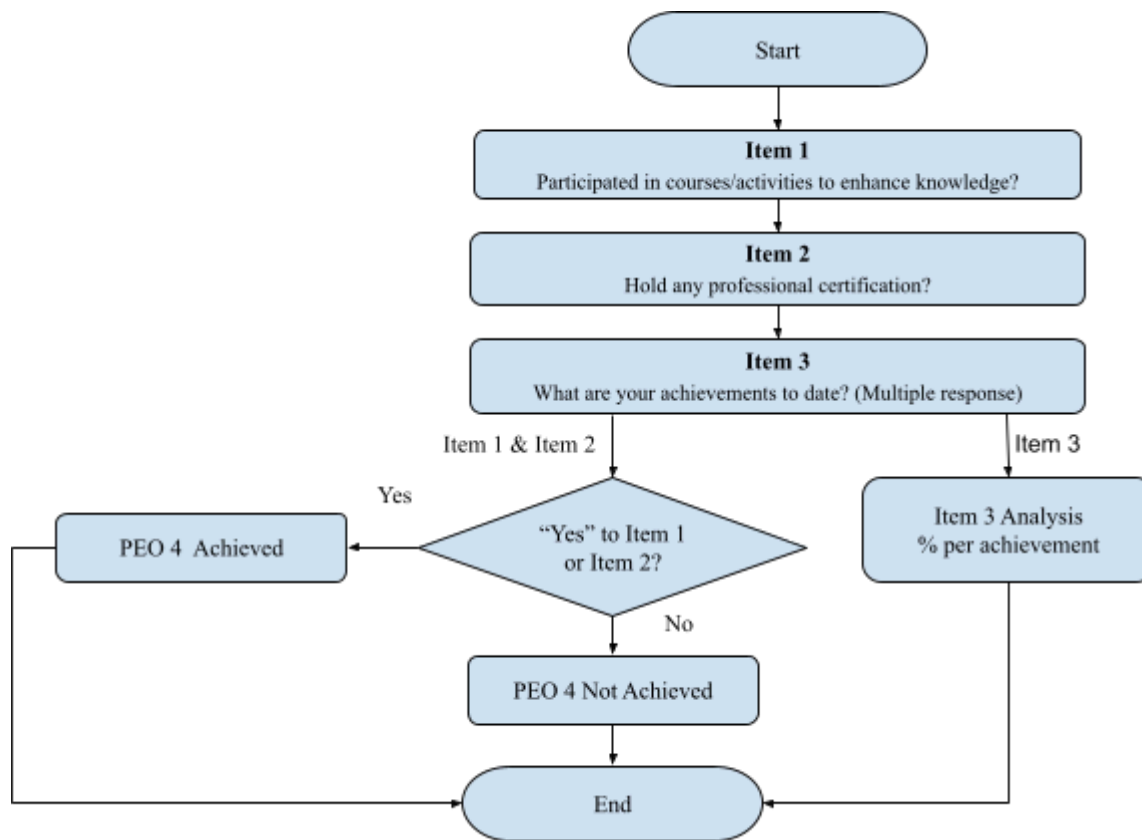


Figure 2.4: Flowchart Measurement of PEO 4

For Items 1 and 2, an OR-based decision rule is applied. A graduate is considered to have achieved PEO 4 if they respond "Yes" to either Item 1 or Item 2, or both. This approach acknowledges that graduates may demonstrate lifelong learning through different pathways — some through active participation in training and upskilling activities, and others through the attainment of formal professional certifications. Requiring both conditions to be met simultaneously would be overly restrictive and may exclude graduates who are genuinely committed to continuous professional development through one of these two legitimate pathways.

An example in Table 2.5 shows how responses are interpreted: if a graduate answers "Yes" to Item 1 but "No" to Item 2, they are still considered to have achieved PEO 4. This structure ensures that any valid form of engagement in professional or academic development is recognized as fulfilling the objective of continuous improvement and career growth.

Table 2.5: Example Respondent Combination and PEO 4 outcome

Respondent	Item 1	Item 2	PEO 4 Outcome
Respondent 1	Yes	Yes	Achieved
Respondent 2	Yes	No	Achieved
Respondent 3	No	Yes	Achieved
Respondent 4	No	No	Not Achieved

For Item 3, since respondents may select more than one option, the data is analysed by calculating the response percentage for each option independently. Each option is treated as a separate binary variable, and its frequency is expressed as a percentage of the total number of respondents. The formula applied is:

$$\text{Percentage for each option (\%)} = (\text{Number of respondents who selected the option} \div \text{Total number of respondents}) \times 100$$

Note that the sum of percentages across all options will exceed 100% due to the multiple-response nature of the item. This is expected and acceptable in multiple-response analysis. Results are reported individually for each category — salary increase, promotion, own business, further education, and not applicable — to provide a comprehensive profile of graduate achievements.

3.0 RESULTS AND ANALYSIS

This PEO review analysis was developed based on two sources of data. The first source comprises questionnaire responses collected from graduates of the Electrical Engineering Department who completed their studies in the 2021 cohort. The second source consists of interview findings obtained from industry advisers appointed by the department for each programme. Together, these two data sources provide a comprehensive basis for evaluating and reviewing the achievement of the Programme Educational Objectives.

3.1 Analysis of PEO of Questionnaire Method

For the DTK program, a total of 155 graduates were recorded from the 2021 cohort, based on data obtained from the Sistem Pengurusan Maklumat Politeknik (SPMP), Politeknik Port Dickson. Out of these, 155 alumni responded to the PEO survey. This results in a response rate of 100%. As the target is to achieve a full 100% response rate, the DTK program meets the required respondent percentage. Additionally, Table 3.1 presents the overall distribution of respondents by gender for DTK programs.

Table 3. 1: Total respondents by gender

Programme	Male	Female	Total respondent	Total graduates	Percentage of Respondents (%)
DTK	100	55	155	155	100%

Source of graduates: SPMP, Politeknik Port Dickson

3.1.1 PEO 1: Practicing Technician in Electrical Engineering-Related Field

PEO 1 represents graduates working as practicing technicians in electrical and/or electronic engineering fields, which is a key measure of the program's effectiveness. Table 3.2 presents the response distribution for each of the three items used to measure PEO 1. The findings are as follows:

- Item 1 :Worked in electrical/electronic engineering field: 100 respondents (65%) answered "Yes", while 55 respondents (35%) answered "No". This indicates that approximately two-thirds of graduates are directly employed in the electrical or electronic engineering field.
- Item 2 :Applied electrical/electronic knowledge: 116 respondents (75%) answered "Yes", while 39 respondents (25%) answered "No". This suggests that a large majority of graduates actively apply their technical knowledge in their current work scope, regardless of whether they are directly employed in the engineering field.
- Item 3 :Performed technical tasks in the field: 118 respondents (76%) answered "Yes", while 37 respondents (24%) answered "No". This is the highest achievement rate among the three items, indicating that most graduates are capable of performing technical tasks effectively in their respective roles.

Table 3. 2: Percentage achievement of by element in PEO 1

PEO 1	Item/ Element	Achievement			
		Yes	%	No	%
Practicing technician in electrical engineering related field	Worked in electrical/electronic engineering field	100	65%	55	35%
	Applied electrical/electronic knowledge	116	75%	39	25%
	Performed technical tasks in the field	118	76%	37	24%

Based on Table 3.3, a graduate is classified as having achieved PEO 1 if they answered "Yes" to at least one of the three items. Out of 155 respondents, 135 graduates (87%) were classified as having achieved PEO 1, while 20 graduates (13%) were classified as not having achieved PEO 1, having answered "No" to all three items. This is clearly illustrated in the pie chart, which shows 87% working in the field against 13% not working in the field.

The overall PEO 1 achievement rate of **87%** comfortably exceeds the Key Performance Indicator (KPI) target of more than 50% for the 2021 cohort, demonstrating that the

programme has successfully produced graduates who are practising as technicians in the electrical engineering related field.

Table 3. 3: Percentage achievement of PEO 1

PEO 1	KPI 2021 Cohort	Analysis PEO 1	Respondent	Achievement (%)
Practicing technician in electrical engineering related field	>50%	Working in field	135	87%
		Not working in field	20	13%

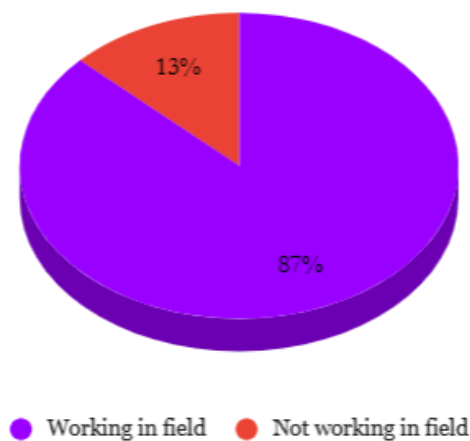


Figure 3. 1: Percentage achievement of PEO 1

3.1.2 PEO 2: Contributing to society with professional ethics and responsibilities

PEO 2 represents graduates who contribute to society with professional ethics and responsibilities, reflecting the programme's commitment to producing graduates who are not only technically competent but also ethically grounded and socially responsible. Table 3.4 presents the response distribution for each of the three items used to measure PEO 2. The findings are as follows:

Item 1 :Ethical teamwork & professional responsibility: 153 respondents (99%) answered "Yes", while only 2 respondents (1%) answered "No". This indicates that almost all

graduates practise ethical conduct and professional responsibility in their workplace or educational setting, reflecting a strong ethical foundation instilled by the programme.

Item 2 :Professional membership: 45 respondents (29%) answered "Yes", while 110 respondents (71%) answered "No". This suggests that while a portion of graduates have joined professional or regulatory bodies such as BEM, IEM, or IEEE, the majority have yet to attain formal professional membership, which may reflect the early stage of their careers.

Item 3 :Community & social involvement: 80 respondents (52%) answered "Yes", while 75 respondents (48%) answered "No". This indicates that slightly more than half of graduates have participated in community or social activities, reflecting a moderate to positive level of social engagement among the 2021 cohort.

Table 3.4: Percentage achievement by element in PEO 2

PEO 2	Element	Achievement			
		Yes	%	No	%
Contributing to society with professional ethic and responsibilities	Ethical teamwork & professional responsibility	153	99%	2	1%
	Professional membership	45	29%	110	71%
	Community & social involvement	80	52%	75	48%

Based on Table 3.5, a graduate is classified as having achieved PEO 2 if they answered "Yes" to at least one of the three items. Out of 155 respondents, 154 graduates (99%) were classified as having achieved PEO 2, while only 1 graduate (1%) was classified as not having achieved PEO 2, having answered "No" to all three items. This is clearly illustrated in the pie chart, which shows 99% contributing to society against 1% not achieved.

The overall PEO 2 achievement rate of **99%** comfortably exceeds the Key Performance Indicator (KPI) target of more than 65% for the 2021 cohort, demonstrating that the programme has successfully produced graduates who contribute to society with professional ethics and responsibilities.

Table 3.5: Percentage achievement of PEO 2

PEO 2	KPI 2021 Cohort	Analysis PEO 2	Respondent	Achievement (%)
Contributing to society with professional ethic and responsibilities	>65%	Contributing to society with professional ethic and responsibilities	154	99%
		Not involved and not contributed to society	1	1%

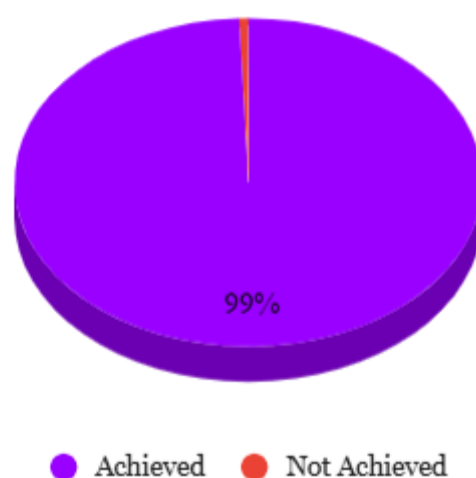


Figure 3.2: Percentage achievement of PEO 2

3.1.3 PEO 3: Engaging in enterprising activities that apply engineering knowledge and technical skills

PEO 3 represents graduates who engage in enterprising activities that apply engineering knowledge and technical skills, reflecting the programme's aspiration to nurture graduates with an entrepreneurial and innovative mindset. Table 3.6 presents the response distribution for each of the three items used to measure PEO 3. The findings are as follows:

- Item 1 :Engaged in electrical/electronic engineering entrepreneurship: 47 respondents (30%) answered "Yes", while 108 respondents (70%) answered "No". This indicates that approximately one-third of graduates have ventured into entrepreneurship in the electrical or electronic engineering field, which may reflect the relatively early career stage of the 2021 cohort.
- Item 2 :Involved in R&D of products, services, or systems: 40 respondents (26%) answered "Yes", while 115 respondents (74%) answered "No". This is the lowest achievement rate among the three items, suggesting that direct involvement in research and development activities remains limited among graduates at this stage.
- Item 3 :Participated in seminars, workshops, conferences, or competitions on entrepreneurship, R&D, or innovation: 57 respondents (37%) answered "Yes", while 98 respondents (63%) answered "No". This is the highest achievement rate among the three items, indicating that participation in knowledge-sharing and competitive platforms is relatively more common than direct entrepreneurship or R&D involvement among the 2021 cohort.

Table 3.6: Percentage achievement by element in PEO 3

PEO 3	Element	Achievement			
		Yes	%	No	%
Engaging in enterprising activities that apply engineering knowledge and technical skills	Engaged in electrical/electronic engineering entrepreneurship	47	30%	108	70%
	Involved in R&D of products, services, or systems	40	26%	115	74%
	Participated in seminars, workshops, conferences, or competitions on entrepreneurship, R&D, or innovation	57	37%	98	63%

Based on Table 3.7, a graduate is classified as having achieved PEO 3 if they answered "Yes" to at least one of the three items. Out of 155 respondents, 88 graduates (57%) were classified

as having achieved PEO 3, while 67 graduates (43%) were classified as not having achieved PEO 3, having answered "No" to all three items. This is clearly illustrated in the pie chart, which shows 57% involved in enterprising activities against 43% not involved.

The overall PEO 3 achievement rate of 57% exceeds the Key Performance Indicator (KPI) target of more than 40% for the 2021 cohort, demonstrating that the programme has met its benchmark in producing graduates who engage in enterprising activities that apply engineering knowledge and technical skills. However, the relatively moderate participation rates across all three items, particularly in R&D involvement (26%), suggest that there remains room for improvement in encouraging greater graduate engagement in entrepreneurship and research-driven activities.

Table 3.7: Percentage achievement of PEO 3

PEO 3	KPI 2021 Cohort	Analysis PEO 3	Respondent	Achievement (%)
Engaging in enterprising activities that apply engineering knowledge and technical skills	>40%	Involved in Enterprising Activities, Research and Development	88	57%
		Not involved and contributed to society	67	43%

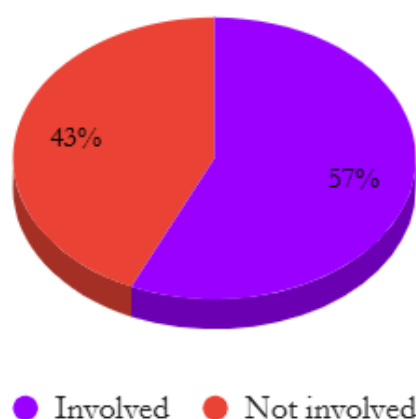


Figure 3.3: Percentage achievement of PEO 3

3.1.4 PEO 4: Engaging in activities to enhance knowledge for successful career advancement

PEO 4 represents graduates who engage in activities to enhance their knowledge for successful career advancement, reflecting the programme's commitment to nurturing a culture of lifelong learning and continuous professional development. Table 3.8 presents the response distribution for the items used to measure PEO 4. The findings are as follows:

- Item 1 :Participation in technology upskilling activities: 99 respondents (64%) answered "Yes", while 56 respondents (36%) answered "No". This indicates that more than half of graduates have actively participated in courses or activities to enhance their knowledge of new technology, reflecting a high level of engagement in lifelong learning among the 2021 cohort.
- Item 2 :Professional certification status: 48 respondents (31%) answered "Yes", while 107 respondents (69%) answered "No". This suggests that approximately one-third of graduates have attained a professional certification, indicating that while formal professional recognition is still developing among the 2021 cohort, a proportion of graduates have already taken steps toward achieving recognised competency standards in their field.

Table 3.8: Percentage achievement by element in PEO 4

PEO 4	Item/ Element	Achievement			
		Yes	%	No	%
Engaging in activities to enhance knowledge for successful career advancement	Participation in technology upskilling activities	99	64%	56	36%
	Professional certification status	48	31%	107	69%

In addition to Items 1 and 2, Table 3.9 captures the self-reported achievements of graduates through a multiple-response question. The distribution of responses is as follows: 34 respondents (22%) reported a salary increase, 15 respondents (10%) reported a promotion, 5 respondents (3%) reported establishing their own business, 18 respondents (12%) reported pursuing further education, 11 respondents (7%) selected not applicable, and 2 respondents (1%) selected other, specifying scholarship and freelance work. As this is a multiple-response item, the percentages do not sum to 100% as respondents were permitted to select more than one option. Salary increase is the most frequently reported achievement at 22%, indicating that a proportion of graduates have progressed in terms of remuneration since completing their studies.

Table 3.9: Percentage self-reported achievements of graduates

Achievements to date	No. of Respondent	
	Yes	Achievement %
Salary increase	34	22%
Promotion	15	10%
Own business	5	3%
Further education	18	12%
Not applicable	11	7%
Other: Scholarship, freelance	2	1%

Based on Table 3.10, a graduate is classified as having achieved PEO 4 if they answered "Yes" to at least one of Items 1 or 2. Out of 155 respondents, 103 graduates (66%) were classified as having achieved PEO 4, while 52 graduates (34%) were classified as not having achieved PEO 4, having answered "No" to both items. This is clearly illustrated in the pie chart, which shows 66% involved against 34% not involved.

The overall PEO 4 achievement rate of **66%** comfortably exceeds the Key Performance Indicator (KPI) target of more than 45% for the 2021 cohort, demonstrating that the

programme has successfully produced graduates who engage in activities to enhance their knowledge for successful career advancement.

Table 3.10: Percentage achievement of PEO 4

PEO 4	KPI 2021 Cohort	Analysis PEO 4	Respondent	Achievement (%)
Engaging in activities to enhance knowledge for successful career advancement	>45%	Involvement in activities to enhance knowledge for successful career advancement.	103	66%
		Not involved	52	34%

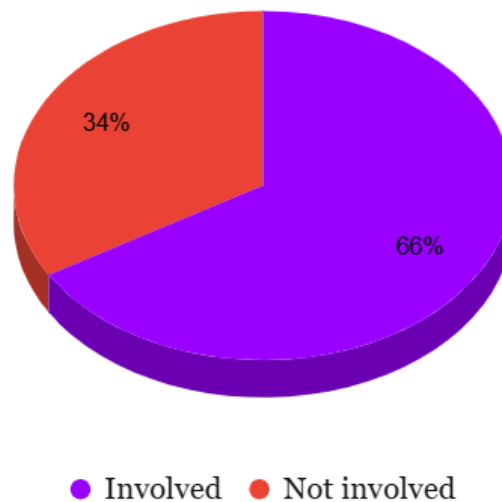


Figure 3.4: Percentage achievement of PEO 4

3.1.5 Summary

The overall analysis of the PEO achievement for the DTK programme graduates of the 2021 cohort demonstrates highly encouraging results, as presented in Table 3.11. For PEO 1, 87% of graduates are either working directly in the electrical or electronic engineering field or

applying related technical knowledge in their job scope, indicating a strong alignment between the programme curriculum and industry requirements.

For PEO 2, 99% of respondents demonstrated active involvement in ethical teamwork, professional responsibility, professional membership, or community and social activities, reflecting an exceptionally high level of professional ethics and social responsibility among graduates.

Regarding PEO 3, 57% of graduates are engaged in enterprising activities, research and development, or innovation-related events in the electrical or electronic engineering field, meeting the KPI threshold and reflecting a satisfactory level of entrepreneurial and innovative initiative among the 2021 cohort.

For PEO 4, 66% of graduates have engaged in activities to enhance their knowledge for career advancement, either through technology upskilling or attainment of professional certification, exceeding the KPI target and highlighting the programme's positive influence on the long-term professional development of its graduates.

Collectively, these findings indicate that the DTK programme effectively meets its educational objectives by producing graduates who are technically competent, professionally responsible, innovative, and committed to continuous career advancement. All four PEOs have met or exceeded their respective KPIs for the 2021 cohort, as summarised in Table 3.11, reflecting the overall effectiveness and success of the DTK programme in fulfilling its educational mission.

Table 3.11: The overall achievement for DTK programme

PEO	KPI 2021 Cohort	Analysis PEO	DTK Achievement		
			No. of Respondent	Achievement (%)	Status
PEO 1: Practicing technician in electrical engineering related field	>50%	Working in field	135	87%	Achieved
		Not working in field	20	13%	
		TOTAL	155	100%	

PEO	KPI 2021 Cohort	Analysis PEO	DTK Achievement		
			No. of Respondent	Achievement (%)	Status
PEO 2: Contributing to society with professional ethic and responsibilities	>65%	contributing to society with professional ethic and responsibilities	154	99%	Achieved
		Not involved and contributed to society	1	1%	
		TOTAL	155	100%	
PEO 3: Engaging in enterprising activities that apply engineering knowledge and technical skills	>40%	Involved in Enterprising Activities, Research and Development	88	57%	Achieved
		Not involved and did not contributed to society	67	43%	
		TOTAL	155	100%	
PEO 4: Engaging in activities to enhance knowledge for successful career advancement	>45%	Involvement in activities to enhance knowledge for successful career advancement.	103	66%	Achieved
		Not involved	52	34%	
		TOTAL	155	100%	

3.2 Analysis of Respondent Interview Protocol Method

A presentation session on the findings of the PEO achievement for the 2021 cohort was conducted online on 05 May 2026. Five stakeholders comprising three IAP members and two alumni participated in the online presentation session. All respondents possess extensive professional experience in engineering, technology, and industry sectors relevant to the DTK programme.

This study is part of an initiative to support the Department of Electrical Engineering (DEE) in strengthening the programme and ensuring that the field of study offered at polytechnics

remains aligned with current industry demands. Accordingly, the interview examined stakeholders' perceptions of the achievement of the PEOs and gathered recommendations for improving the DTK programme. The respondents' profiles, based on input from key stakeholders such as the IAP and alumni, are presented in Table 3.12. The feedback obtained during the interview provided valuable insights into programme strengths, areas requiring improvement, and strategic recommendations for enhancing the relevance and effectiveness of the DTK programme in meeting current industry expectations.

Table 3. 12: Stakeholders Respondent Profiles

Respondents	Category	Name	Position & Organization	Year of Experience
Respondent 1	IAP	Ratna Marliza binti Mokhtar	Education Lead, RUNCLOUD Sdn. Bhd.	28 years
Respondent 2	IAP	Ts. Mohamad Ariffin bin Zulkifli	Managing Director, Myinvent Technologies Sdn. Bhd.	12 years
Respondent 3	IAP	Ts. Dr. Mohd Ismifaizul bin Mohd Ismail	Staff Researcher, MIMOS Berhad	21 years
Respondent 4	alumni	En. Muhamad Syafiq Aizad bin Safri	System Engineer Equipment Cohu Malaysia Sdn. Bhd.	5 years
Respondent 5	alumni	En. Adli Ammar bin Azizan	First Container Services, Selangor	4 years

The respondents were selected based on their professional experience and familiarity with the DTK programme. The combination of IAP members and alumni provided balanced perspectives on graduate performance, curriculum relevance, and industry expectations, thereby strengthening the validity and credibility of the interview findings.

To achieve the objectives of this study, PEO achievement data were analysed and complemented by interviews with IAP members and DTK alumni. The interviews served to validate the quantitative findings, obtain recommendations for Continuous Quality Improvement (CQI), and provide additional insights for each PEO. The initial PEO achievement was measured using a questionnaire distributed to graduates of the 2021 cohort five years after graduation, in accordance with the standard PEO assessment cycle. This evaluation was conducted five years after graduation in accordance with the standard timeframe for PEO assessment.

All respondents participated in the presentation session and generally agreed that the findings accurately reflected the current performance of the DTK programme. They also acknowledged that the analysis was consistent with industry expectations. Nevertheless, several respondents provided additional suggestions to further improve the clarity of the PEOs and strengthen the assessment instrument. These recommendations were shared during the presentation session and through feedback submitted via the Google Form.

The stakeholder feedback was analysed according to each PEO, and the findings are presented in the following sections.

3.2.1 Stakeholders Feedback on PEO 1

The evaluation of PEO 1 focuses on graduates' ability to apply technical knowledge and practical skills in their professional careers. Feedback from both alumni and industry representatives indicates that graduates possess the necessary technical competencies to perform effectively in the workplace. The stakeholders generally agreed that the programme has successfully prepared graduates for industry demands while highlighting several areas for further enhancement.

...kurikulum di Politeknik Port Dickson (PPD) sangat membantu kerana pendedahan kepada kerja-kerja amali (hands-on) memudahkan graduan melakukan tugas di industri tanpa memerlukan latihan yang ekstensif... (Respondent 4)

The respondents' views demonstrate that the programme's emphasis on hands-on learning has successfully equipped graduates with workplace-ready technical competencies, enabling them to adapt quickly to industrial requirements with minimal additional training. The interview findings are consistent with the quantitative survey results, where PEO 1 recorded an achievement of 87%, indicating that graduates are well prepared for engineering practice.

Another alumnus acknowledged that the technical competencies acquired throughout the programme remain relevant to current industry practices. Nevertheless, the respondent recommended increasing students' exposure to emerging technologies to ensure graduates are better prepared for evolving industrial requirements.

...bersetuju bahawa kemahiran teknikal yang dipelajari adalah relevan, namun mencadangkan pendedahan lebih mendalam kepada teknologi terkini yang digunakan di sektor industri elektrik semasa... (Respondent 5)

Although the current curriculum remains relevant, the respondents emphasised the importance of continuously updating learning experiences to reflect current industrial technologies and practices.

The industry representative also provided valuable insights regarding the wording used in the earlier version of the Programme Educational Objectives.

...penggunaan istilah "kompeten" dalam PEO 2014 tidak sesuai kerana tahap kompetensi profesional biasanya memerlukan pengalaman kerja yang lama (3 hingga 5 tahun) dan pensijilan khas, bukannya diukur sejurus selepas graduan tamat pengajian. Beliau menyokong penambahbaikan dalam PEO 2019 yang menggunakan istilah lebih realistik seperti "Practising Technician"... (Respondent 2)

The discussion reflects the need for the PEO statements to represent realistic career progression for diploma graduates rather than long-term professional competency. Stakeholders agreed that the term “Practising Technician” is more appropriate than “Competent” because professional competency is generally achieved after several years of industrial experience and professional development. The revision made in the 2019

curriculum therefore improves the validity of the PEO and aligns more closely with industry expectations for engineering technician graduates.

The interview findings confirm that graduates possess the technical knowledge and practical competencies expected by industry. At the same time, continuous curriculum enhancement and periodic review of the PEO statements remain necessary to ensure long-term alignment with technological advancement and industry expectations.

3.2.2 Stakeholders Feedback on PEO 2

The evaluation of PEO 2 focuses on graduates' professional ethics, communication skills, teamwork abilities, and engagement with professional bodies. Feedback from stakeholders indicates that graduates generally demonstrate positive professional attributes while several recommendations were made to strengthen professional awareness and engagement.

..saya nak tanya yang berkenaan dengan soalan graduan diberi peluang oleh industri untuk menjadi ahli ni, adakah maksudnya pelajar Poli PD daripada kohort 2021 sehingga sekarang kita ukur dia for example macam MBOT, dia dah dapat Tc. Adakah macam gitu pengukuran dia?...(Respondent 2)

The discussion revealed that the assessment criteria for professional body participation require clearer definitions to distinguish professional registration, competency certification, and organisational membership. Such clarification would improve the consistency and reliability of future PEO assessments. A more structured classification of professional registrations, competency certifications, and professional memberships would improve the reliability of future PEO assessments.

The importance of professional ethics was also highlighted by alumni feedback.

...etika kerja dan disiplin yang diterapkan di politeknik membantu graduan menjaga imej profesional syarikat... (Respondent 4)

The alumni responses indicate that professional ethics and workplace discipline developed throughout the programme continue to benefit graduates in their professional careers. Communication and teamwork were also identified as strengths developed during the study period.

...penglibatan dalam aktiviti luar dan kerja berpasukan semasa di kampus membantu dalam membina kemahiran komunikasi dengan masyarakat dan rakan sekerja...(Respondent 5)

The interview also demonstrates the positive contribution of co-curricular activities in strengthening graduates' communication and teamwork competencies.

The panel also emphasised the importance of early exposure to professional registration pathways.

...pihak industri sentiasa memberi peluang kepada graduan untuk terlibat dalam badan profesional, namun institusi perlu memberi pendedahan awal tentang kepentingan pendaftaran dengan badan seperti BEM atau MBOT sebelum pelajar bergraduasi...(Respondent 2)

The panel recommended introducing earlier exposure to professional registration pathways so that graduates are more prepared to pursue professional recognition after entering the workforce.

Overall, the stakeholder responses indicate that PEO 2 has been successfully achieved, particularly in developing graduates' professionalism, ethical values, teamwork and communication skills. Future CQI initiatives should focus on increasing awareness of professional registration and certification pathways.

3.2.3 Stakeholders Feedback on PEO 3

PEO 3 evaluates graduates' leadership, entrepreneurial awareness, innovation capabilities, and their ability to contribute positively to society and industry. Feedback from stakeholders highlighted the need to review the wording and focus of the objective to better reflect the capabilities expected of diploma graduates.

...PEO3 tu terms kita tu terlalu strict pada R&D. Maybe kita boleh letak inovasi kot kat situ. Maksudnya perkataan R&D tu sendiri. Haah. Sebab diploma level is not dia punya levellah untuk join R&D punya ni. Sebab dia ada analitik, analisis rather than design lah.....maybe kita boleh rework lagi PEO number three... (Respondent 3)

The industry representative considered the existing terminology to be less suitable for diploma graduates, as research and development activities generally require competencies beyond technician level.

The relevance of entrepreneurship education was also discussed by alumni.

...subjek keusahawanan memberi nilai tambah, namun lebih baik jika ia dikaitkan secara langsung dengan pengurusan projek teknikal... (Respondent 4)

Integrating entrepreneurship with technical project management would provide graduates with more practical and industry-relevant learning experiences while strengthening their innovation capabilities.

Leadership development was identified as another positive outcome of the programme.

...kemahiran memimpin pasukan semasa projek akhir adalah asas penting bagi pengurusan kerja di industri...(Respondent 5)

Project-based learning was also recognised as an effective platform for developing leadership and team management competencies required in industry.

The recommendation to revise the terminology used in PEO 3 was further reinforced by another industry representative.

...istilah "R&D" dalam PEO3 ditukar kepada "Inovasi" atau "Keusahawanan" kerana tahap diploma lebih menjurus kepada analisis dan aplikasi inovasi berbanding reka bentuk (design) R&D yang biasanya memerlukan tahap pendidikan lebih tinggi (Ijazah/Master)...(Respondent 2)

Collectively, the stakeholders agreed that innovation and entrepreneurship more accurately represent the expected roles of diploma graduates than direct involvement in research and development activities. Therefore, a review of the terminology used in PEO 3 may enhance the relevance and accuracy of future assessments.

Stakeholder feedback confirms that PEO 3 remains relevant; however, refining the terminology and performance indicators would improve its alignment with industry expectations and the actual responsibilities of diploma-level engineering technicians.

3.2.4 Stakeholders Feedback on PEO 4

PEO 4 focuses on lifelong learning, continuous professional development, and graduates' commitment to enhancing their competencies throughout their careers. Stakeholders agreed that this objective remains highly relevant in supporting graduate employability and career progression.

...graduan perlu proaktif mencari ilmu baharu terutamanya berkaitan perisian kejuruteraan terkini yang sering berubah di pasaran... (Respondent 4)

The alumni recognised continuous learning as an essential strategy for remaining competent in a rapidly evolving engineering environment.

The significance of professional certification as part of continuous learning was also highlighted.

...kepentingan pensijilan profesional (seperti sijil fiber optik) sebagai sebahagian daripada pembelajaran berterusan untuk meningkatkan kebolehpasaran...(Respondent 5)

Professional certifications were viewed as valuable evidence of graduates' commitment to continuous professional development and employability enhancement.

The industry representative further reinforced the relevance of this objective while suggesting improvements to the assessment approach.

...PEO4 adalah sangat relevan kerana ia menunjukkan kesinambungan graduan dalam meningkatkan ilmu. Beliau mencadangkan agar instrumen ini mengukur tindakan sebenar graduan dalam menghadiri kursus teknologi baharu atau memperoleh pensijilan profesional tambahan...(Respondent 2)

The panel further recommended strengthening the assessment instrument by incorporating objective evidence of lifelong learning rather than relying solely on self-perception. Objective evidence may include participation in professional training programmes, attainment of industry-recognised certifications, enrolment in further studies, and involvement in continuing professional development (CPD) activities.

The findings demonstrate that graduates recognise the importance of lifelong learning in sustaining their professional growth. Future PEO assessments should therefore place greater emphasis on measurable evidence of professional development activities.

3.2.5 Summary

The stakeholder interview successfully validated the graduate survey findings and confirmed that the Programme Educational Objectives remain relevant to current industry requirements. The interviews also identified several opportunities for CQI, particularly in curriculum enhancement, refinement of PEO terminology, professional registration awareness and the assessment of lifelong learning activities. Overall, the interview findings complement the quantitative survey results and strengthen the credibility of the overall PEO achievement assessment through methodological triangulation.

3.3 Proposed Continuous Quality Improvement

The stakeholder feedback obtained for PEO 1 to PEO 4 provides valuable input for the CQI process. The identified strengths and areas for enhancement have been reviewed by the department, and the responsible units have been identified to facilitate the implementation of

appropriate improvement initiatives. The summary of stakeholder feedback and the corresponding responsible units is presented in Table 3.13.

Table 3. 13: Summary of Stakeholder Feedback and Responsible Units for CQI Implementation

PEO	Stakeholder's Feedback	Stakeholder	Responsible Unit
PEO 1	1) Graduates possess strong practical competencies. 2) Hands-on learning effectively supports workplace readiness. 3) Exposure to the latest technologies in the electrical industry should be enhanced. Recommendation: Strengthen the integration of emerging technologies within the curriculum and expand industry-engagement activities to ensure graduates remain aligned with current industry practices and technological advancements.	Respondent 5	DEE / UKE, BK
PEO 2	The definition of professional body membership is unclear, leading to confusion between organizations such as CIDB and NIOSH, and professional bodies such as MBOT, BEM, IEM, and IEEE. Recommendation: Standardize the definitions and categories of professional body membership, professional licenses, and competency certifications	Respondent 2	UKE, BK

	within the PEO assessment instrument to ensure consistent interpretation and data collection.		
PEO 3	The use of the term "Research and Development (R&D)" may not accurately reflect the expected competencies and career roles of diploma graduates. Recommendation: Re-evaluate the appropriateness of incorporating R&D within PEO 3, including a review of the corresponding performance indicators and assessment measures.	Respondent 2 & 3	UKE, BK
PEO 4	The PEO 4 instrument is too general and relies heavily on Yes/No questions. Recommendation: Include more Likert-scale items and develop more specific indicators to enable a more comprehensive and meaningful assessment.	Respondent 3	UKE, BK

3.4 Determination of PEO Achievement KPI for the 2022 Cohort

The determination of the final PEO achievement target percentages for the 2022 cohort was based on the analysis of the PEO achievement results for the 2021 cohort and three key references. First, the baseline recommendations provided by the Unit Kejuruteraan Elektrik (UKE), Bahagian Kurikulum (BK), were taken into consideration. Second, the proposed target percentages were discussed and refined through consultation with the IAP during the presentation of the PEO achievement analysis. Finally, the Programme Advisory Committee (PAC) reviewed the proposed targets and approved the final PEO achievement benchmarks for the 2022 cohort.

During the consultation session, the stakeholders expressed satisfaction with the overall achievement of the DTK PEOs in the first assessment cycle. They acknowledged that all four PEOs had achieved their respective targets and agreed that the proposed performance benchmarks were appropriate for monitoring future programme performance.

Based on the review and discussion of PEO achievement trends across the five engineering programmes, all respondents agreed that the overall performance patterns were comparable. After careful consideration of the recommendations and the achievement trends of the 2021 cohort, the DEE agreed to adopt the proposed KPI targets for the 2022 cohort, as presented in Table 3.14. These targets represent a collaborative and evidence-based approach to supporting CQI while ensuring that future PEO evaluations remain realistic, measurable, and aligned with stakeholder expectations.

Table 3.14: KPIs for PEO Achievement of the 2022 Cohort

PEO	Achievement (%)	
	Baseline UKE	Key Performance Indicator
PEO 1 Practicing Technician in Electrical Engineering Related Field	40	> 50
PEO 2 Contributing to society with professional ethics and responsibilities	40	> 65
PEO 3 Engaging in enterprising activities that apply engineering knowledge and technical skills	25	> 40
PEO 4 Engaging in activities to enhance knowledge for successful career advancement	40	> 45

4.0 DISCUSSION AND CONCLUSION

The review of PEOs for the DTK programme at Politeknik Port Dickson was conducted using two key methods: a questionnaire distributed to graduates of the 2021 cohort and structured interviews with members of the IAP and selected alumni. This analysis aimed to assess the extent to which the DTK programme has fulfilled its educational objectives and how well it aligns with the evolving needs of the computer and information technology industries.

For PEO 1, which aims to produce graduates who are practicing technicians in electrical engineering-related fields, the study found that 87% of graduates achieved the intended outcome, exceeding the established KPI of 50%. The findings demonstrate that graduates possess relevant technical knowledge and practical competencies required by industry. Alumni highlighted that the hands-on learning approach adopted throughout the programme enabled graduates to adapt quickly to workplace requirements and perform technical tasks effectively. Nevertheless, stakeholders recommended increasing graduates' exposure to emerging technologies and current industrial practices to ensure continued relevance in a rapidly evolving technological environment. A summary of the analysis and stakeholder interview findings related to PEO 1 is presented in Table 4.1.

Table 4.1: The summary of the analysis and the results of the interviews for PEO 1

PEO	Achievement (%)		
	KPI 2021 Cohort	Achievement 2021 Cohort	KPI 2022 Cohort
	> 50	87	> 50
PEO 1 Practicing Technician in Electrical	Interview Findings:		
	1) Graduates possess strong practical competencies. 2) Hands-on learning effectively supports workplace readiness.		

Engineering Related Field	3) Exposure to the latest technologies in the electrical industry should be enhanced.
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PEO 2 recorded an achievement of 99% for the 2021 cohort, significantly exceeding both the established KPI of 65% and the revised KPI of 65% for the 2022 cohort. The analysis shows that graduates demonstrated strong professional ethics, teamwork capabilities, communication skills, and workplace responsibility. Alumni also acknowledged that the ethical values and discipline developed during their studies contributed positively to their professional conduct in the workplace. Nevertheless, stakeholders highlighted the need to improve awareness of professional registration pathways and encourage greater participation in professional bodies such as MBOT, BEM, IEM and IEEE. A detailed summary of the analysis and stakeholder interview findings related to PEO 2 is presented in Table 4.2.

Table 4. 2: The summary of the analysis and the results of the interviews for PEO 2

PEO	Achievement (%)		
	KPI 2021 Cohort	Achievement 2021 Cohort	KPI 2022 Cohort
	> 65	99	> 65
PEO 2 Contributing to society with professional ethics and responsibilities	Interview Findings:		
	The definition of professional body membership is unclear, leading to confusion between organizations such as CIDB and NIOSH, and professional bodies such as MBOT, BEM, IEM, and IEEE.		

The assessment results indicate that PEO 3 was successfully achieved by the 2021 cohort, recording an achievement rate of 57%, which exceeded the established KPI of more than 40%. The assessment indicates that graduates demonstrated leadership capabilities,

entrepreneurial awareness, and innovation-related competencies developed through project-based learning and technical activities. Industry representatives acknowledged the relevance of entrepreneurship education but suggested that greater emphasis should be placed on innovation and practical application rather than research and development (R&D), which may not accurately reflect the expected roles of diploma graduates. Furthermore, stakeholders recommended reviewing the terminology used in PEO 3 to ensure better alignment with industry expectations and graduate career pathways. These proposed improvements are outlined in Table 4.3, which summarises the stakeholder interview findings related to PEO 3.

Table 4. 3: The summary of the analysis and the results of the interviews for PEO 3

PEO	Achievement (%)		
	KPI 2021 Cohort	Achievement 2021 Cohort	KPI 2022 Cohort
	> 40	57	> 40
PEO 3 Engaging in enterprising activities that apply engineering knowledge and technical skills	Interview Findings:		
	The use of the term "Research and Development (R&D)" may not accurately reflect the expected competencies and career roles of diploma graduates.		

As for PEO 4, which emphasises lifelong learning and career advancement, the achievement rate for the 2021 cohort was 66%, exceeding both the established KPI of 40% and the revised KPI of 45% for the 2022 cohort. This result indicates that a substantial proportion of graduates actively engaged in activities that enhanced their knowledge and supported their professional growth.

The results confirm that graduates demonstrated positive awareness and commitment towards lifelong learning, continuous skills development, and professional certifications. Industry representatives also emphasised the importance of measuring tangible evidence of lifelong

learning, such as participation in training programmes, upskilling initiatives, and attainment of industry-recognised certifications. A detailed summary of the analysis and stakeholder interview findings related to PEO 4 is presented in Table 4.4.

Table 4. 4: The summary of the analysis and the results of the interviews for PEO 4

PEO	Achievement (%)		
	KPI 2021 Cohort	Achievement 2021 Cohort	KPI 2022 Cohort
	> 45	66	> 45
PEO 4 Engaging in activities to enhance knowledge for successful career advancement	Interview Findings:		
	The PEO 4 instrument is too general and relies heavily on Yes/No questions.		

The assessment of the PEOs for the DTK programme at Politeknik Port Dickson demonstrates that the programme has successfully achieved its intended educational objectives, as summarised in Table 4.5. Based on the analysis of graduate survey data and stakeholder interview findings, all four PEOs recorded achievement rates that exceeded their respective KPI targets. These results indicate the effectiveness of the programme in producing graduates who are technically competent, professionally responsible, innovative, entrepreneurial, and committed to lifelong learning and continuous professional development.

Table 4.5: Summary of PEO Achievement for the 2021 Cohort

PEO	KPI	Achievement	Status
PEO1	>50%	87%	Achieved
PEO2	>65%	99%	Achieved
PEO3	>40%	57%	Achieved
PEO4	>45%	66%	Achieved

The overall findings suggest that the DTK programme remains relevant to current industry requirements and has been effective in preparing graduates for employment, professional practice, ethical responsibilities, innovation-related activities, and career advancement. The positive feedback obtained from industry stakeholders and alumni further supports the programme's ability to produce graduates who possess the competencies and attributes expected by employers.

Nevertheless, stakeholders identified several areas for continuous improvement, including greater exposure to emerging technologies, enhanced awareness of professional registration pathways, refinement of entrepreneurship and innovation-related outcomes, and improved measurement of lifelong learning activities. These recommendations provide valuable input for CQI initiatives aimed at strengthening curriculum delivery, industry collaboration, and graduate development.

Overall, the assessment confirms that the DTK programme continues to meet its educational objectives and remains aligned with industry expectations. The findings will serve as an important reference for future curriculum enhancement and quality assurance efforts to ensure that DTK graduates remain competitive, adaptable, and relevant in an increasingly dynamic technological environment.

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6.0 REPORT VERIFICATION

It is hoped that the PEO performance report for DTK programme Department of Electrical Engineering, Politeknik Port Dickson graduated in the 2021 cohort will contribute towards improving quality in education and training in Polytechnic Malaysia as well as strengthening the planning of polytechnic studies programmes in the future.

Prepared by;



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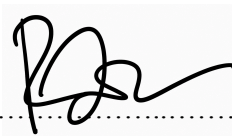
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