



KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI



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

DIPLOMA IN ELECTRICAL ENGINEERING (ENERGY EFFICIENCY)-DEQ

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 Electrical Engineering (Energy Efficiency) - DEQ. 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 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 Electrical Engineering (Energy Efficiency) is a three-year full-time programme comprising of five semesters course work with one full semester of industrial training.

1.2.1 Synopsis

The DEQ programme is designed to cover the current wide discipline of electrical engineering with the added specialization in-depth technical competence in a specific area of energy efficiency used in the energy management. The broad-based electrical foundation of which includes electrical principles, power system and protection, electrical machine and motor control. This programme focuses on educating students about developing sustainable energy practices. Students will apply knowledge of utilizing tools and techniques for calculating specific energy consumption, establish an improved data recording, collect and analysis system to keep track of energy consumption, conduct energy audits and leading efforts to conserve energy and reduce energy-related costs, assess the potential of new energy efficiency technologies, and also improve the performance of machines and utilities.

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 DEQ 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 DEQ 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 ?

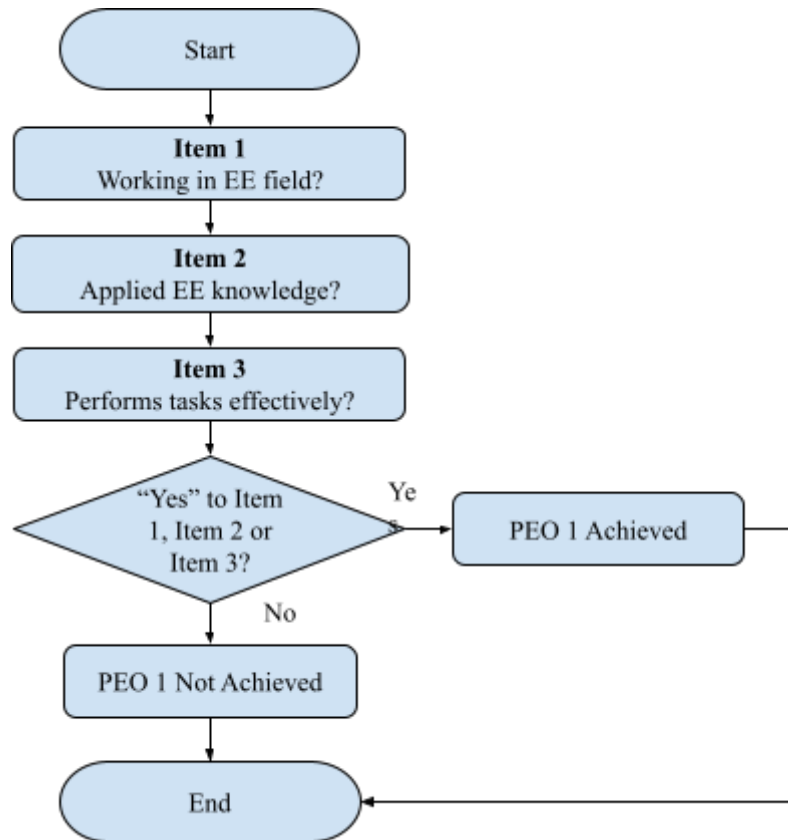


Figure 2.1: Flowchart Measurement of PEO 1

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)?

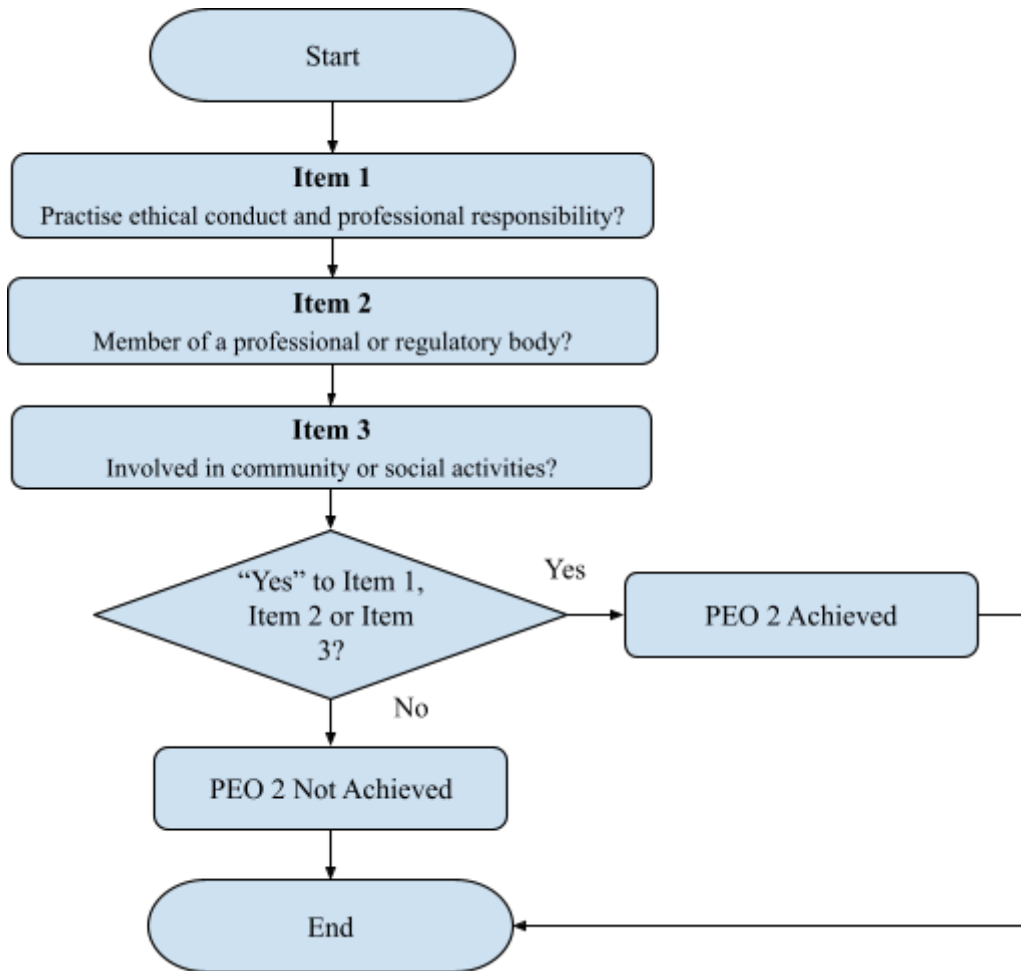


Figure 2.2: Flowchart Measurement of PEO 2

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?

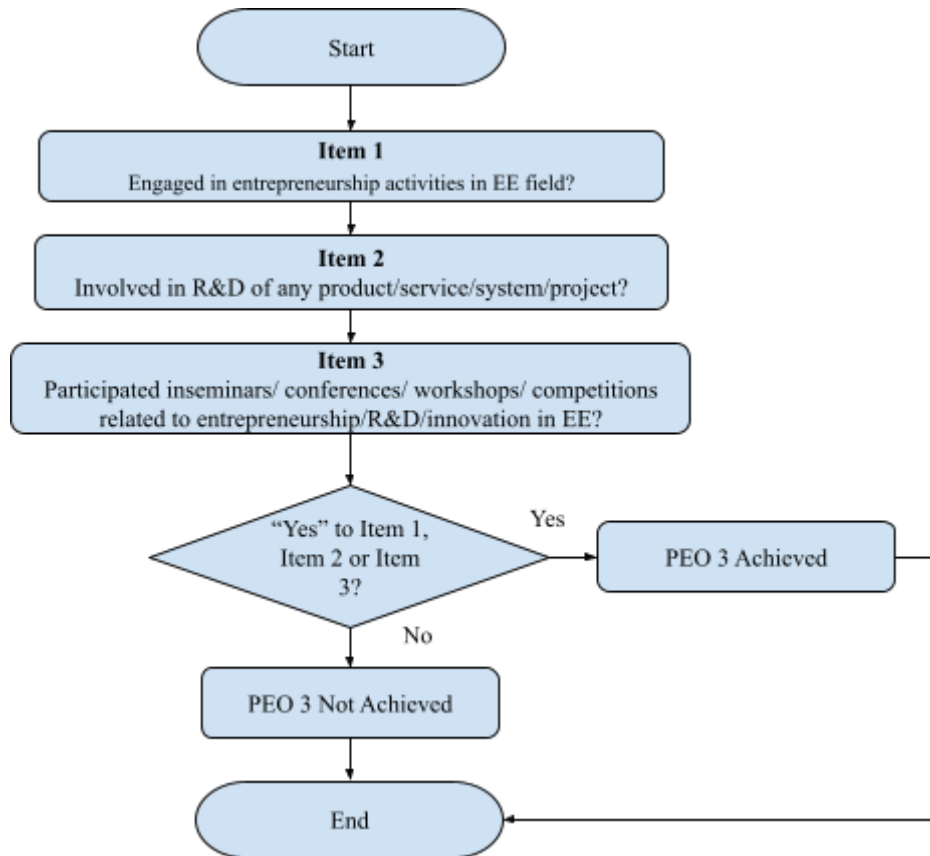


Figure 2.3: Flowchart Measurement of PEO 3

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.

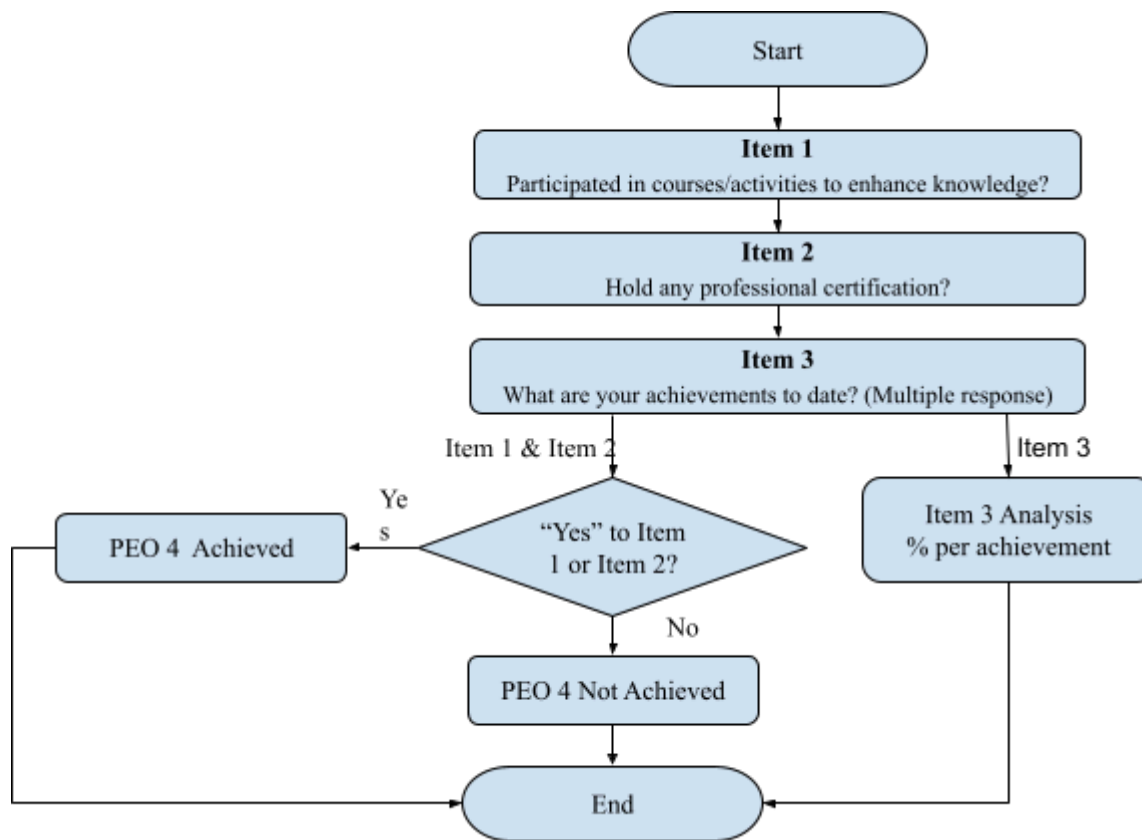


Figure 2.4: Flowchart Measurement of PEO 4

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 DEQ program, a total of 95 graduates were recorded from the 2021 cohort, based on data obtained from the Sistem Pengurusan Maklumat Politeknik (SPMP), Politeknik Port Dickson. Out of these, 95 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 DEQ program meets the required respondent percentage. Additionally, Table 3.1 presents the overall distribution of respondents by gender for DEQ programs.

Table 3. 1: Total respondents by gender

Programme	Male	Female	Total respondent	Total graduates	Percentage of Respondents (%)
DEQ	80	15	95	95	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: 70 respondents (74%) answered "Yes", while 25 respondents (26%) answered "No". This indicates that approximately three-quarters of graduates are directly employed in the electrical or electronic engineering field, reflecting a strong employment alignment with the programme's technical focus.
- Item 2 :Applied electrical/electronic knowledge: 85 respondents (89%) answered "Yes", while 10 respondents (11%) 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: 87 respondents (92%) answered "Yes", while only 8 respondents (8%) 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	70	74%	25	26%
	Applied electrical/electronic knowledge	85	89%	10	11%
	Performed technical tasks in the field	87	92%	8	8%

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 95 respondents, 91 graduates (96%) were classified as having achieved PEO 1, while 4 graduates (4%) 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 96% working in the field against 4% not working in the field.

The overall PEO 1 achievement rate of **96%** 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	91	96%
		Not working in field	4	4%

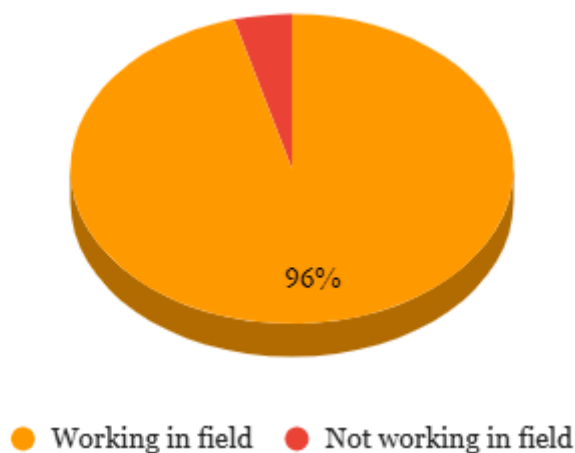


Figure 3. 1: Percentage achievement of PEO 1

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: 95 respondents (100%) answered "Yes", while no respondents (0%) answered "No". This is a remarkable finding, indicating that all graduates in the DEQ programme practise ethical conduct and professional responsibility in their workplace or educational setting, reflecting an exemplary ethical foundation instilled by the programme.
- Item 2 :Professional membership: 36 respondents (38%) answered "Yes", while 59 respondents (62%) 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: 47 respondents (49%) answered "Yes", while 48 respondents (51%) answered "No". This indicates an almost equal split among graduates in terms of participation in community or social activities, suggesting that involvement in such activities is moderate 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	95	100%	0	0%
	Professional membership	36	38%	59	62%
	Community & social involvement	47	49%	48	51%

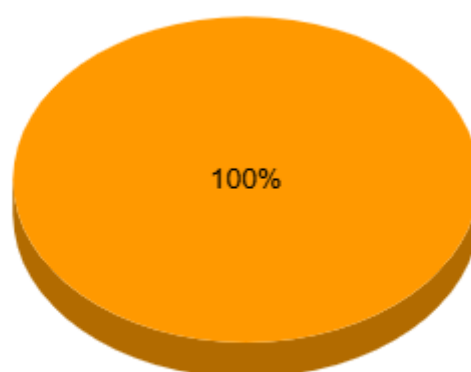
Based on Table 3.5, a graduate is classified as having achieved PEO 2 if they answered "Yes" to at least one of the three items. Out of 95 respondents, all 95 graduates (100%) were classified as having achieved PEO 2, while no graduate was classified as not having achieved

PEO 2. This is clearly illustrated in the pie chart, which shows 100% contributing to society against 0% not achieved.

The overall PEO 2 achievement rate of **100%** far exceeds the Key Performance Indicator (KPI) target of more than 65% for the 2021 cohort, demonstrating that the programme has exceptionally produced graduates who contribute to society with professional ethics and responsibilities. This perfect achievement rate is primarily driven by the unanimous "Yes" response to Item 1, reflecting the programme's strong emphasis on ethical practice and professional responsibility.

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	95	100%
		Not involved and not contributed to society	0	0%



● Achieved

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: 31 respondents (33%) answered "Yes", while 64 respondents (67%) 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: 21 respondents (22%) answered "Yes", while 74 respondents (78%) 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: 23 respondents (24%) answered "Yes", while 72 respondents (76%) answered "No". This indicates that participation in knowledge-sharing and competitive platforms is similarly limited, though slightly higher than 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	Engaged in electrical/electronic engineering entrepreneurship	31	33%	64	67%
	Involved in R&D of products, services, or systems	21	22%	74	78%

PEO 3	Element	Achievement			
		Yes	%	No	%
technical skills	Participated in seminars, workshops, conferences, or competitions on entrepreneurship, R&D, or innovation	23	24%	72	76%

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 95 respondents, 48 graduates (51%) were classified as having achieved PEO 3, while 47 graduates (49%) 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 51% involved in enterprising activities against 49% not involved.

The overall PEO 3 achievement rate of **51%** 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 low participation rates across all three items, particularly in R&D involvement (22%), suggest that there remains considerable 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	48	51%
		Not involved and contributed to society	47	49%

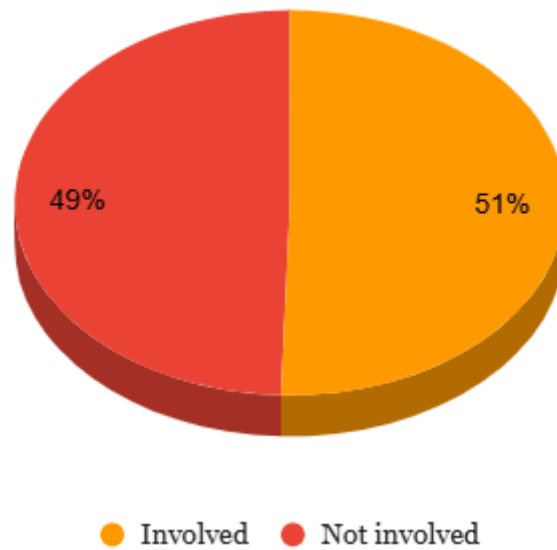


Figure 3.3: Percentage achievement of PEO 3

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: 59 respondents (62%) answered "Yes", while 36 respondents (38%) answered "No". This indicates that more than three-fifths of graduates have actively participated in courses or activities to enhance their knowledge of new technology, reflecting a relatively strong level of engagement in lifelong learning among the 2021 cohort.
- Item 2 :Professional certification status: 25 respondents (26%) answered "Yes", while 70 respondents (74%) answered "No". This suggests that approximately one-quarter of graduates have attained a professional certification, indicating that formal professional recognition is still at an early stage of development among the 2021 cohort, representing an area for potential improvement.

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	59	62%	36	38%
	Professional certification status	25	26%	70	74%

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: 58 respondents (61%) reported a salary increase, 28 respondents (29%) reported a promotion, 5 respondents (5%) reported establishing their own business, 27 respondents (28%) reported pursuing further education, 20 respondents (21%) selected not applicable, and no respondents selected other. 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 61%, indicating that a majority of graduates have progressed in terms of remuneration since completing their studies, which reflects positively on the programme's contribution to graduates' career advancement.

Table 3.9: Percentage self-reported achievements of graduates

Achievements to date	No. of Respondent	
	Yes	Achievement%
Salary increase	58	61%
Promotion	28	29%
Own business	5	5%
Further education	27	28%
Not applicable	20	21%
Other:	0	0%

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 95 respondents, 60 graduates (63%) were classified as having achieved PEO 4, while 35 graduates (37%) were classified as not having achieved PEO 4, having answered "No" to both items. This is clearly illustrated in the pie chart, which shows 63% involved against 37% not involved.

The overall PEO 4 achievement rate of **63%** 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.	60	63%
		Not involved	35	37%

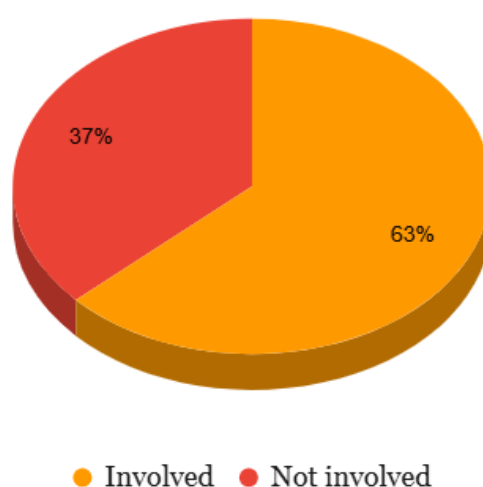


Figure 3.4: Percentage achievement of PEO 4

3.1.5 Summary

The overall analysis of the PEO achievement for the DEQ programme graduates of the 2021 cohort demonstrates highly encouraging results, as presented in Table 3.11. For PEO 1, 96% 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. The progressive increase in achievement rates across the three items — from 74% for direct employment (Item 1), to 89% for knowledge application (Item 2), and 92% for technical task performance (Item 3) — further reflects the programme's effectiveness in equipping graduates with practical competencies that extend beyond formal employment in the engineering sector.

For PEO 2, all 95 respondents (100%) demonstrated active involvement in ethical teamwork, professional responsibility, professional membership, or community and social activities, reflecting an exceptional and unanimous level of professional ethics and social responsibility among graduates. Notably, Item 1 recorded a perfect 100% response rate, indicating that every graduate of the DEQ programme practises ethical conduct and professional responsibility in their working or educational environment. This is the highest PEO 2 achievement recorded across all programmes in this study.

Regarding PEO 3, 51% 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. However, the narrow margin above the KPI target of 40%, combined with relatively low individual item rates — particularly in R&D involvement at 22% — suggests that entrepreneurship and research engagement remains an area requiring targeted improvement and further support from the programme.

For PEO 4, 63% 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. The high salary increase rate of 61% among self-reported achievements further reinforces the positive career progression outcomes of DEQ graduates.

Collectively, these findings indicate that the DEQ 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 DEQ programme in fulfilling its educational mission.

Table 3.11: The overall achievement for DEQ programme

PEO	KPI 2021 Cohort	Analysis PEO	DEQ Achievement		
			No. of Respondent	Achievement (%)	Status
PEO 1: Practicing technician in electrical engineering related field	>50%	Working in field	91	96%	Achieved
		Not working in field	4	4%	
		TOTAL	95	100%	
PEO 2: Contributing to society with professional ethic and responsibilities	>65%	contributing to society with professional ethic and responsibilities	95	100%	Achieved
		Not involved and contributed to society	0	0%	
		TOTAL	95	100%	
PEO 3: Engaging in enterprising activities that apply engineering knowledge and technical skills	>40%	Involved in Enterprising Activities, Research and Development	48	51%	Achieved
		Not involved and did not contributed to society	47	49%	
		TOTAL	95	100%	
PEO 4: Engaging in activities to enhance knowledge for successful career advancement	>45%	Involvement in activities to enhance knowledge for successful career advancement.	60	63%	Achieved
		Not involved	35	37%	
		TOTAL	95	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. Four stakeholders representing the DEQ programme, comprising members of the IAP and alumni, attended the session. These stakeholders were selected based on their industrial experience and direct involvement with the DEQ programme, enabling them to provide constructive feedback on the relevance of the programme and the achievement of its PEOs.

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 study examined stakeholders' perspectives and feedback regarding the achievement of the DEQ PEOs. The respondents' profiles, based on input from key stakeholders such as the IAP and alumni, are presented in Table 3.12. The feedback collected during the session has been instrumental in identifying programme strengths, areas for improvement and strategic actions to enhance the relevance and effectiveness of the DEQ programme in fulfilling industry expectations.

Table 3.12: Stakeholders Respondent Profiles

Respondents	Category	Name	Position & Organization	Year of Experience
Respondent 1	IAP	Ts. Siew Peng Wah	Director Seikou Systec Sdn. Bhd.	36 years
Respondent 2	IAP	Ts. Siti Raihana binti Abu Yazaid	Manager Business Development (IFM), Harta Maintenance Sdn. Bhd.	11 years
Respondent 3	IAP	En. Ir Al-Khairi bin Mohd Daud	Chief Consultant, Faqeh Management	34 years

Respondent 4	alumni	En. Mohammad Izzat bin Mohamad Asri	Juruteknik Avionic Pangkalan Udara Kuching	3 years
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To achieve the objectives of this study, an analysis of the PEO achievement data was carried out, complemented by interviews with the IAP and alumni of the DEQ programme. These interviews aimed to gather insights for improving the attainment of the PEO. The findings from the interviews are organised into several sections, each corresponding to a specific PEO. The PEOs were assessed through a questionnaire distributed to graduates of the 2021 cohort. This evaluation was conducted five years after graduation in accordance with the standard timeframe for PEO assessment.

All respondents participated in the PEO presentation session. All respondents generally agreed with the findings presented and acknowledged that the analysis accurately reflected the current performance of the DEQ programme. However, a few respondents provided additional suggestions and recommendations to further enhance the clarity and effectiveness of the PEOs, either by sharing their views during the presentation session or through feedback submitted via the Google Form.

3.2.1 Stakeholders Feedback on PEO 1

The evaluation of PEO 1 focuses on graduates' ability to apply the knowledge and technical competencies acquired during their studies in fulfilling industry requirements. Feedback obtained from industry stakeholders indicates that graduates have demonstrated a high level of work readiness and possess the competencies required to perform effectively in real workplace environments. The stakeholders also acknowledged the relevance of the current curriculum in meeting the evolving needs of the industry, particularly in the areas of energy efficiency, electrical systems, energy management and green building practices.

...mengesahkan tahap kesiapan kerja graduan yang tinggi, di mana pelajar kini mampu melaksanakan tugas di tapak bina secara serta-merta tanpa memerlukan latihan intensif selama sebulan seperti amalan sebelumnya. Pihak majikan turut menyifatkan kurikulum sedia ada amat relevan dengan keperluan semasa industri, khususnya dalam pengkhususan

Bangunan Hijau (DEG dan DEQ), serta menyatakan kesediaan untuk menyerap graduan yang menunjukkan prestasi cemerlang sebagai pekerja tetap... (Respondent 1)

...memberikan maklum balas positif mengenai kualiti dan kesediaan pelajar PPD yang menjalani latihan industri di firma mereka dengan menyatakan bahawa kurikulum program pengajian tersebut sangat relevan dengan kehendak semasa industri, khususnya bagi pengkhususan DEQ. Beliau turut menekankan terdapat peningkatan ketara dalam tahap kemahiran teknikal pelajar, di mana sebelum ini pelajar memerlukan latihan intensif selama satu bulan sebelum dibenarkan turun ke tapak projek, namun kini mereka didapati mampu melaksanakan tugas di tapak bina tanpa memerlukan latihan asas tambahan... (Respondent 1)

... tempoh latihan industri ini berfungsi sebagai platform penilaian yang berkesan bagi syarikat menyerap pelajar yang menunjukkan prestasi cemerlang sebagai pekerja tetap selepas tamat tempoh praktikal. Berdasarkan kualiti yang ditunjukkan, beliau mengesahkan bahawa Objektif Pendidikan Program (PEO) 1 telah berjaya dicapai kerana pelajar bukan sahaja memiliki ilmu teori, malah mampu mengaplikasikannya secara praktikal dengan efisien dan memenuhi piawaian industri...(Respondent 1)

Collectively, the interview findings indicate that DEQ graduates possess strong technical competencies and workplace readiness. These findings also validate the quantitative PEO achievement results obtained from the graduate survey.

The stakeholders consistently agreed that graduates can perform workplace tasks with minimal supervision and that the current curriculum remains relevant to industry needs. The employers' willingness to recruit outstanding trainees as permanent employees further demonstrates their confidence in the quality of DEQ graduates. These findings provide strong qualitative evidence supporting the achievement of PEO 1.

3.2.2 Stakeholders Feedback on PEO 2

The evaluation of PEO 2 focuses on graduates' professional development, participation in professional bodies, and contributions to society through professional and community-related activities. Industry stakeholders acknowledged the importance of professional engagement but highlighted several practical challenges affecting graduate participation in professional organisations and related activities.

...memberikan pandangan kritikal mengenai penglibatan graduan dalam badan profesional dengan menyatakan bahawa pihak majikan secara amnya tidak menghalang graduan untuk menyertai badan-badan tersebut. Walau bagaimanapun, beliau menegaskan bahawa kekangan utama yang dihadapi adalah daripada segi pembiayaan yuran tahunan, kos pembaharuan (renewal), dan keperluan mata CPD, memandangkan kebanyakan syarikat tidak menanggung kos berkenaan sehingga menyebabkan ramai graduan, termasuk jurutera berpengalaman, tidak berminat untuk mendaftar. Walaupun bagaimanapun, panel IAP bersetuju bahawa keahlian profesional amat penting bagi membolehkan graduan mengikuti latihan teknikal terkini, membina rangkaian industri, dan mengemas kini pengetahuan mereka, kadar penglibatan sebenar masih kekal rendah. Hal ini disebabkan oleh status keahlian tersebut yang bukan merupakan satu kewajipan undang-undang untuk semua sektor pekerjaan... (Respondent 1)

The findings indicate that although professional membership supports career development, financial constraints and CPD requirements discourage graduates from maintaining active membership. Therefore, professional membership rates alone may not accurately represent graduates' professional development.

...mempersoalkan peratusan pencapaian yang dilaporkan dalam instrumen penilaian sedia ada kerana statistik yang menunjukkan 99% hingga 100% graduan politeknik menjadi ahli badan profesional dianggap tidak realistik dan "terlampau fantastik". Beliau berpendapat bahawa terdapat kemungkinan berlaku kekeliruan definisi dalam kalangan graduan yang menganggap pemilikan kad CIDB atau NIOSH sebagai keahlian badan profesional, sedangkan pihak industri menjelaskan bahawa kad-kad tersebut hanyalah lesen kerja asas. Hal ini kerana lesen berkenaan tidak melibatkan pembangunan profesional berterusan

(CPD) atau pengetahuan teknikal yang mendalam seperti mana yang ditetapkan oleh badan profesional seperti BEM atau MBOT. Sehubungan itu, beliau mengesyorkan agar instrumen soalan diperhalusi supaya lebih spesifik bagi mengelakkan berlakunya kekeliruan data pada masa hadapan... (Respondent 1)

This statement highlights concerns regarding the validity of the assessment data. The stakeholder emphasised the need for clearer definitions and more specific survey questions to differentiate between basic work licences and genuine professional memberships.

The discussion also extended to graduates' involvement in community-related activities.

...penglibatan graduan dalam aktiviti CSR dengan menyatakan bahawa aktiviti tersebut biasanya hanya menjadi KPI bagi syarikat besar, syarikat multinasional (MNC), atau Syarikat Berkaitan Kerajaan (GLC), manakala syarikat berskala kecil dan sederhana jarang melaksanakannya secara formal. Beliau turut memaklumkan bahawa buat masa ini, tiada statistik jelas yang menunjukkan bagaimana graduan terlibat dalam aktiviti CSR di peringkat organisasi. Justeru, pihak industri memberikan peringatan agar tidak mudah mengisytiharkan sebarang pencapaian CSR sekiranya ia tidak menggambarkan realiti sebenar penglibatan graduan di tempat kerja... (Respondent 1)

The stakeholder noted that graduates' participation in CSR activities varies significantly across organisations and may not be adequately reflected in the current assessment framework. Therefore, caution should be exercised when interpreting achievement data related to societal contributions.

... mengesyorkan agar unit berkaitan menyemak semula soalan dalam instrumen penilaian kaji selidik bagi membezakan antara lesen kerja asas (CIDB/NIOSH) dengan keahlian profesional (BEM/MBOT). Selain itu, beliau turut menekankan kepentingan ketelusan data di mana data pencapaian perlu disemak semula dengan lebih teliti bagi memastikan ia benar-benar mencerminkan situasi sebenar di industri sebelum dilaporkan sebagai pencapaian rasmi... (Respondent 1)

The recommendation highlights the need to improve the validity and reliability of the PEO assessment instrument to ensure that reported achievement accurately reflects graduates' actual professional engagement.

In conclusion, PEO 2 was achieved based on the quantitative measurement, with an achievement rate of 100%. However, stakeholder feedback identified concerns regarding the clarity and validity of the current indicators used to measure PEO 2. Therefore, the assessment instrument should be refined in the next review cycle.

3.2.3 Stakeholders Feedback on PEO 3

No specific comments were raised by the stakeholders regarding the achievement of PEO 3 during the presentation session. This suggests that stakeholders were generally satisfied with the reported achievement and did not identify any major issues requiring immediate improvement. Nevertheless, all respondents agreed that the reported achievement reflects the current performance of the programme. No objections or additional recommendations were recorded.

Although no additional comments were received, continuous exposure to industrial career pathways, entrepreneurship programmes and industry engagement activities remain important to further strengthen graduates' entrepreneurial awareness and career readiness.

3.2.4 Stakeholders Feedback on PEO 4

No additional comments or recommendations were provided by the stakeholders regarding PEO 4. The absence of additional comments indicates stakeholders' acceptance of the current achievement level and the department's ongoing initiatives. The respondents generally agreed with the reported findings and acknowledged the importance of lifelong learning and continuous professional development for graduates.

Although the current achievement exceeded the KPI target, continuous efforts to promote professional certification pathways and lifelong learning opportunities should be maintained as part of the department's CQI initiatives.

3.2.5 Summary

The stakeholder interview session provided valuable insights into the achievement of the PEOs and the effectiveness of the current assessment approach. Overall, stakeholders acknowledged that DEQ graduates possess relevant technical competencies, demonstrate positive professional attributes, and can adapt to industry requirements. Although detailed recommendations were mainly provided by Respondent 1, all stakeholders agreed with the overall findings and no conflicting opinions were expressed during the discussion.

For PEO 1, stakeholders confirmed that graduates demonstrate strong workplace readiness and possess competencies that meet current industry expectations. For PEO 2, concerns were raised regarding the clarity of the indicators used to measure professional engagement and membership in professional bodies, highlighting the need for more accurate assessment criteria.

For PEO 3 and PEO 4, no specific comments or additional recommendations were received. However, the department will continue strengthening industry engagement, entrepreneurship, lifelong learning, and professional certification initiatives through its Continuous Quality Improvement (CQI) activities.

Overall, the stakeholder feedback confirms the continued relevance of the DEQ programme while identifying opportunities for further enhancement. These findings will support the department's CQI initiatives and help ensure that the programme remains aligned with evolving industry needs and expectations.

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 were 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	Graduates demonstrated a high level of work readiness and were able to perform workplace tasks immediately upon employment. The existing curriculum was also found to be relevant to industry needs, particularly in the field of Green Building.	Respondent 1	DEE / UKE-BK
PEO 2	The definition of professional body membership is unclear, leading to confusion between professional membership organizations (e.g., MBOT, BEM, IEM, IEEE) and competency or certification agencies (e.g., CIDB, NIOSH). Recommendation: Standardize the definitions of professional membership, professional licenses, and competency certifications within the PEO assessment instrument to ensure consistent interpretation and measurement.	Respondent 1	UKE-BK

	The current rubric and achievement levels require review, as the reported achievement rates are excessively high (99%–100%) and may not realistically reflect graduate performance. Recommendation: Review and refine the rubric and assessment instrument based on SMARTO principles to establish more realistic, measurable, and discriminative performance indicators.	Respondent 1	DEE / UKE-BK
PEO 3	No additional comments were received. Stakeholders agreed with the reported achievement and recommended continue strengthening industrial engagement activities, entrepreneurship programmes and career awareness initiatives.	All Respondents	DEE
PEO 4	No additional comments were received. Stakeholders agreed with the reported achievement and recommended continuing promoting professional certification pathways and lifelong learning opportunities through collaboration with industry and professional bodies.	All Respondents	DEE

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 DEQ 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 DEQ 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 DEQ programme has fulfilled its educational goals and how well it aligns with the evolving expectations of the engineering industry.

The analysis shows that all four PEO exceeded their respective KPI targets, indicating that the DEQ programme has successfully achieved its intended educational outcomes based on both quantitative survey results and qualitative stakeholder feedback. The stakeholder interview findings further supported the quantitative results obtained through the graduate survey. Industry representatives generally agreed that the programme remains relevant to current industry requirements and continues to produce graduates who are technically competent, employable, and capable of adapting to evolving workplace expectations.

Nevertheless, several recommendations were proposed to improve future assessments and strengthen graduate development, particularly in relation to professional engagement, entrepreneurship awareness, and lifelong learning initiatives.

For PEO 1, which focuses on graduates' technical competency and workplace readiness, the achievement rate for the 2021 cohort was 96%, significantly exceeding the KPI of 50%. Stakeholders acknowledged that graduates can perform workplace tasks effectively with minimal additional training and possess competencies that meet current industry expectations.

The curriculum was also recognised as being highly relevant to the needs of the Green Building and Quantity Surveying sectors. These findings are summarised 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	96	> 50
PEO 1 Practicing Technician in Electrical Engineering Related Field	Interview Findings: Graduates demonstrated a high level of work readiness and were able to perform workplace tasks immediately upon employment. The existing curriculum was also found to be relevant to industry needs, particularly in the field of Green Building.		

PEO 2 achieved an attainment rate of 100%, exceeding the KPI target of 65%. Stakeholders recognised the importance of professional engagement and participation in professional bodies but highlighted concerns regarding the assessment instrument. Specifically, clearer distinctions are required between professional memberships and competency-based certifications to avoid misinterpretation of achievement data. The findings are summarised 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	100	> 65
PEO 2 Contributing to society with professional ethics and responsibilities	Interview Findings: 		

	1) The definition of professional body membership is unclear, leading to confusion between professional membership organizations (e.g., MBOT, BEM, IEM, IEEE) and competency or certification agencies (e.g., CIDB, NIOSH). 2) The current rubric and achievement levels require review, as the reported achievement rates are excessively high (99%–100%) and may not realistically reflect graduate performance.
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The achievement rate for PEO 3 was 51%, exceeding the established KPI of 40%. Although no specific comments were provided, continued exposure to industry career pathways and entrepreneurship initiatives was identified as an appropriate CQI action. A summary of the analysis and stakeholder interview findings related to PEO 3 is presented in Table 4.3.

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	51	> 40
PEO 3 Engaging in enterprising activities that apply engineering knowledge and technical skills	Interview Findings:		
	No additional comments were received. Stakeholders agreed with the reported achievement and recommended continue strengthening industrial engagement activities, entrepreneurship programmes and career awareness initiatives.		

PEO 4 recorded an achievement rate of 63%, exceeding the KPI target of 45%. Although no additional comments were provided, continued promotion of lifelong learning and

professional certification remains an important CQI initiative. 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	63	> 45
PEO 4 Engaging in activities to enhance knowledge for successful career advancement	Interview Findings:		
	No additional comments were received. Stakeholders agreed with the reported achievement and recommended continuing promoting professional certification pathways and lifelong learning opportunities through collaboration with industry and professional bodies.		

The assessment of the PEOs for the DEQ programme at Politeknik Port Dickson demonstrates that the programme has successfully achieved its intended educational objectives. 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 findings indicate that the programme remains effective in producing graduates who possess strong technical competencies, professional ethics, entrepreneurial awareness, and a commitment to lifelong learning. Table 4.5 summarises the achievement status of all PEOs for the 2021 cohort, where each PEO exceeded the established KPI target and was therefore considered achieved.

Table 4. 5: Summary of PEO Achievement for the 2021 Cohort

PEO	KPI	Achievement	Status
PEO1	>50%	96%	Achieved
PEO2	>65%	100%	Achieved
PEO3	>40%	51%	Achieved
PEO4	>45%	63%	Achieved

The overall findings suggest that the DEQ programme continues to be relevant to current industry needs and expectations. Nevertheless, several opportunities for improvement were identified, including enhancing the specificity of assessment instruments, strengthening industry participation in graduate competency evaluation, increasing students' exposure to industry career pathways and entrepreneurship opportunities, and improving assessment instruments and strengthening collaboration with industry. These recommendations provide valuable input for CQI initiatives and will support future curriculum enhancement and programme development.

Overall, the assessment confirms that the DEQ programme continues to meet its educational objectives and remains aligned with industry expectations. The findings will serve as an important reference for future quality assurance and curriculum review activities to ensure that DEQ graduates remain competitive, adaptable, and responsive to technological and industrial change.

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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;



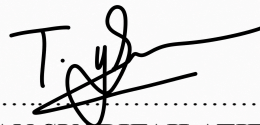
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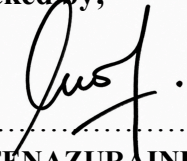
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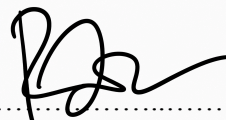
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