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Tutor feedback, simulation-based learning, and AI-aware practice in MSc electrical engineering module: a case study

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ABSTRACT

Engineering programs routinely collect tutor evaluation data for quality assurance, yet the evidence is often not translated into a transparent, reproducible module enhancement plan that can be audited, monitored, and reported as scholarly work. This paper proposes a tutor feedback-to-enhancement (TFE) framework that transforms a standard tutor feedback worksheet into: i) a coded evidence base; ii) a descriptive closed-item profile; and iii) an evidence-to-action matrix (EAM) that links observed strengths and gaps to targeted interventions and measurable indicators. The framework is demonstrated through a single-module case study (an introductory MSc electrical power engineering systems (EPES) module) using one completed tutor feedback sheet containing closed ratings and open comments. The closed items show uniformly positive evaluations (7/12 items rated excellent and 5/12 rated good; no satisfactory/unsatisfactory responses; one item not applicable). The open-text evidence highlights simulation as a core learning scaffold, the importance of equitable access to laptops and e-learning resources, and a specific curriculum enhancement need for a dedicated lecture on photovoltaic (PV) design and battery energy storage systems (BESS). The main contribution is a practical, low-cost method that operationalizes routine tutor feedback into an auditable enhancement pathway, including an explicit artificial intelligence-aware (AI-aware) practice component that emphasizes verification and engineering judgment.

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1. INTRODUCTION

Higher education providers are under sustained pressure to demonstrate that teaching, assessment, and student support are effective and continuously improved. In engineering programs, this expectation is sharpened by professional standards and rapidly changing technical practice. Evidence-informed enhancement is therefore increasingly framed as an improvement cycle that links assessment and feedback to actionable design decisions, rather than as a compliance exercise alone [1]. Learning analytics has further strengthened this agenda by enabling the monitoring of engagement patterns and the evaluation of targeted interventions when used responsibly [2], [3].

At the same time, engineering education has become more digitally mediated. Institutions continue to expand e-learning platforms and technology-enhanced teaching, but studies report persistent challenges with usability, infrastructure, and equitable access that can limit the learning value of digital resources [4], [5]. In particular, simulation and virtual laboratories are widely used in electrical power engineering to bridge the gap between mathematical models and observable system behavior, offering repeatable practice and immediate feedback when appropriately scaffolded [6], [7].

Alongside tools and content, the social conditions for learning remain critical. Research links the quality of the teacher-student relationship to engagement, motivation, and persistence, suggesting that learning environments in which students feel respected and supported are more likely to sustain participation in demanding technical tasks [8], [9]. In simulation-based education, psychological safety is also emphasized as a boundary condition for productive error-making, reflection, and assessment practices [10], [11]. Further, fast-moving context is students' use of generative artificial intelligence (AI) for drafting, explanation, and code or model generation. Recent evidence shows that students perceive both benefits (efficiency and support) and risks (over-reliance, inaccurate outputs, and unclear attribution) [12].

Systematic reviews on academic integrity highlight the need for explicit guidance and assessment designs that still elicit individual reasoning [13]. Complementary work on AI literacy argues for teaching students to evaluate AI outputs, cite appropriately, and verify against authoritative sources [14], while studies in engineering education underscore the importance of aligning AI use with professional judgment and disciplinary standards [15]. Current research strongly supports formative feedback, learning analytics, simulation-based learning, and AI literacy in higher education. Learning analytics dashboards have also been shown to support student engagement and intervention planning by making learning activities more visible to educators [16].

However, less attention has been given to the practical use of routine tutor feedback sheets as researchable evidence for module enhancement. In many programs, these forms remain quality-assurance documents, but their findings are not always systematically used to improve teaching, nor are they converted into a transparent evidence-to-action process. This creates a methodological gap, particularly in simulation-rich electrical engineering modules, where tutor observations, digital learning resources, student support, and AI-aware practice need to be integrated into a single, auditable enhancement framework. This study addresses this gap by developing and demonstrating the tutor feedback-to-enhancement (TFE) framework.

This study addresses the gap by proposing a TFE framework and demonstrating its use in a simulation-rich MSc electrical power engineering systems (EPES) module. The objectives are: i) to summarize the closed-response profile of a tutor feedback worksheet using descriptive statistics; ii) to code open-text comments into a small set of improvement dimensions; iii) to produce an evidence-to-action matrix (EAM) that links evidence to interventions and measurable indicators; and iv) to embed AI-aware practice expectations that emphasize verification and transparent attribution. The contribution is a reproducible, low-cost enhancement method that explicitly distinguishes established findings from the original, testable outputs produced in this study. Related research indicates that structured assessment and feedback processes can strengthen module delivery and student achievement, including in engineering teaching contexts [17], [18], while the quality of teacher–student relationships is linked to learners' interest and participation [19].

Meta-analytic evidence further suggests that formative peer feedback can improve the academic writing of higher education students when it is scaffolded and aligned with clear criteria [20]. Recent studies continue to show that relationship quality is associated with engagement and academic outcomes, with mixed-methods evidence and mediation models linking support and pressure to engagement [21]–[23]. In parallel, institutions increasingly draw on digital trace data and dashboards to track engagement and provide early-warning support, ranging from descriptive tracking to scaled deployments and controlled evaluations of analytics interventions [24]–[27].

To make this data actionable, researchers have proposed explainable feedback-oriented analytics and synthesized design principles for learner-facing dashboards [28], [29], and feedback literacy perspectives describe how educators design processes that enable students to interpret and use feedback productively [30], [31]. Finally, evidence on students' use of generative AI for assessment support reinforces the need for explicit AI-aware guidance to sit alongside evaluation artifacts [32]. Together, these strands establish a strong rationale for evidence-informed module enhancement; however, they rarely operationalize how routine tutor evaluation artifacts can be converted into a repeatable set of targeted enhancements for simulation-rich modules in the presence of generative AI. This study contributes to engineering education research in three ways:

- It proposes a TFE framework that converts tutor evaluation data into an auditable improvement process.
- It introduces an EAM linking qualitative feedback to targeted pedagogical interventions.
- It integrates AI-aware teaching practices into module enhancement planning.

This study is novel in converting a routine tutor feedback worksheet into a transparent TFE framework to evidence-based improve simulation-rich, AI-aware engineering education.

2. METHOD

TFE is a lightweight improvement pipeline designed for normal module delivery conditions. It repurposes a completed tutor feedback worksheet as a small but practical dataset and produces a documented chain from evidence to intervention. The framework has four steps: i) closed-item profiling; ii) open-text coding; iii) EAM construction; and iv) monitoring and iteration. Before introducing the iterative version, it is useful to distinguish the basic linear form of TFE. In its linear form, the framework operates as a one-pass sequence in which tutor feedback is translated into evidence, organized through the EAM, and used to generate targeted module enhancements. This version is useful for showing the core evidence-to-improvement pathway. Figure 1 illustrates TFE for engineering education and how tutor feedback evidence is translated into targeted module improvements without iteration.

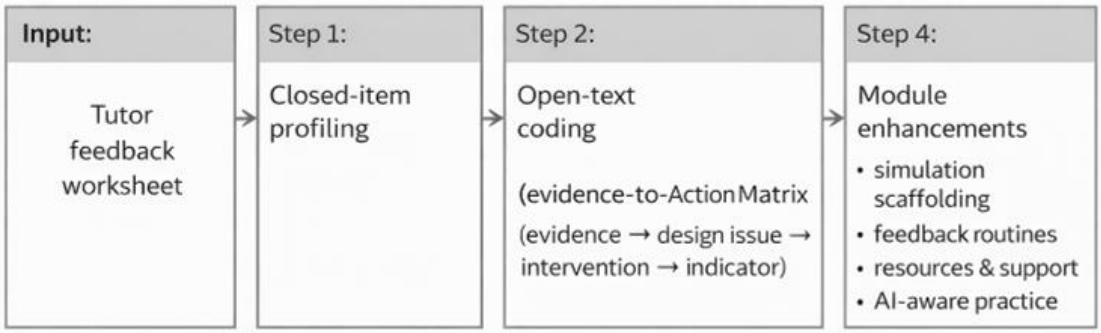

Figure 1. Linear TFE framework for engineering education without iteration

The iterative version extends this logic by adding monitoring and feedback loops, allowing implementation outcomes to inform renewed analysis, revision of the EAM, and further pedagogical refinement. The mechanism is as:

- Step 1: categorical closed responses (e.g., excellent/good/satisfactory/unsatisfactory) are summarized using counts and percentages across items.
- Step 2: open-text responses are coded into pre-defined improvement dimensions relevant to simulation-rich engineering modules: simulation platform, resources and access, feedback routines, assessment readiness, learner support and safety, and AI-aware practice.
- Step 3: coded evidence is converted into an EAM. Each row contains: i) the evidence statement (verbatim or lightly paraphrased); ii) the linked design issue; iii) the proposed intervention; and iv) an indicator that can be monitored in subsequent deliveries. Indicators are selected to be feasible without new systems, drawing on typical learning analytics and assessment evidence (virtual learning environment (VLE) access, simulation task completion, recurrent error patterns, and rubric-based performance).
- Step 4: the module team reviews indicators and student voice in the next delivery and updates coding and interventions accordingly. AI-aware practice is treated as a design constraint: the method requires a clear statement of permitted AI assistance, expected verification steps in technical work, and assessment features that still elicit individual reasoning and professional judgment.

Figure 2 presents an iterative TFE system in which monitoring feeds evidence back into earlier analytical stages rather than ending the process. Monitoring evaluates whether the selected interventions remain aligned with the original evidence. Monitoring may also trigger a return to data preparation, where the original summarize and coded comments are re-examined, themes refined, and tutor feedback reinterpreted. The reconsidered evidence is then re-entered into the EAM, which informs a revised round of module enhancements.

In this way, the framework operates not as a one-way sequence but as a reflexive, evidence-responsive improvement cycle, in which monitoring continually informs analysis, redesign, and pedagogical refinement. Open-text comments were analyzed using thematic coding. Initial codes were derived from common dimensions in engineering education improvement literature, including simulation use, learning resources, feedback practices, assessment readiness, learner support, and AI-aware practice. The comments were then categorized into these dimensions to identify recurring themes. This study employs a qualitative case study design to examine how routine tutor feedback can be transformed into an evidence-based enhancement framework. The case study approach enables a detailed examination of the TFE process within a real module context.

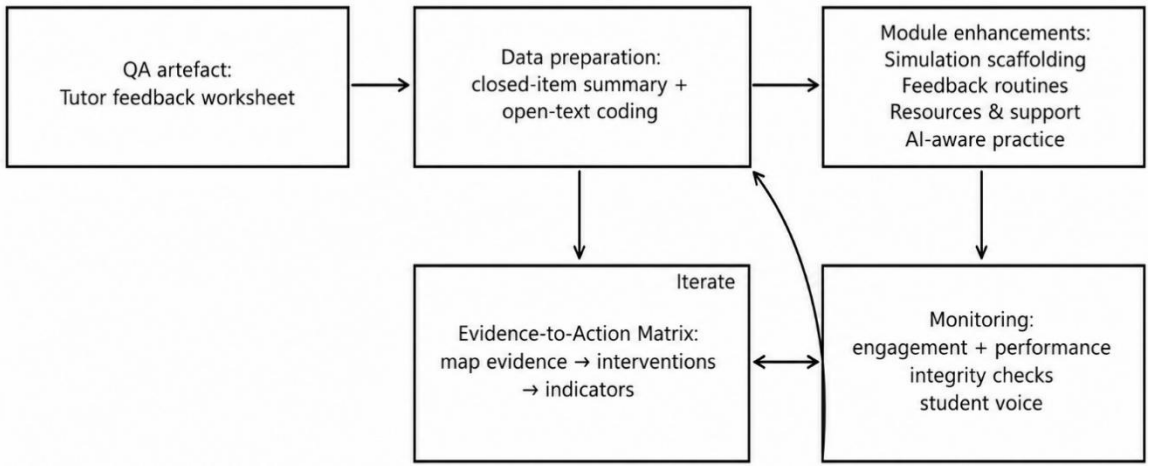

Figure 2. The iterated TFE framework

3. CASE STUDY CONTEXT AND DATA

The case study concerns an introductory EPES module delivered within an MSc engineering program. The module combines lectures with guided problem-solving, circuit and network simulations, VLE-supported activities, and a short renewable energy design task introducing photovoltaic (PV) and battery energy storage systems (BESS) concepts. The primary dataset is a completed tutor feedback worksheet, as in Appendix. The worksheet includes closed items (ratings and categorical selections) and open prompts addressing learner support, resources, the impact of teaching and feedback, and suggested improvements. The analysis followed the TFE steps described. Although the dataset consists of a single tutor feedback worksheet, the objective of this study is methodological demonstration rather than statistical generalization.

4. RESULTS

4.1. Closed-response profile (descriptive statistics)

All closed-ended and categorical questions referenced in this section are provided in Appendix. Across the 12 Likert-style rating items (CEM-Q1 to CEM-Q5 and CEM-Q7 to CEM-Q14, excluding one not applicable item), 7 items were rated excellent (58.3%) and 5 items were rated good (41.7%), with no satisfactory or unsatisfactory responses. The e-learning item (CEM-Q11) was marked not applicable. Table 1 summarizes the distribution.

Additional categorical items indicated that learning objectives were consistently explained and linked to their relevance (CEM-Q16), that the module enabled students to be thoroughly confident and practiced in using new skills (CEM-Q17), and that students were fully prepared for summative assessment (CEM-Q18). Both feedback items (CEM-Q19a and CEM-Q19b) were rated always. No additional learning support was reported as required (CEM-Q21a), and students were reported as feeling safe (CEM-Q22a). Table 1. The closed-item ratings show a uniformly positive evaluation profile, indicating consistently strong delivery quality across all assessed dimensions.

Table 1. Distribution of Likert-style ratings across applicable closed items (n=12)

Rating category	Count	Percentage (%)
Excellent	7	58.3
Good	5	41.7

4.2. Open-text themes

Four themes recur across open responses. First, simulation served as a central scaffold for learning electrical networks, supporting safe, cost-effective testing and practical problem-solving. Second, equitable access to resources is emphasized, particularly modern laptops, reliable Wi-Fi, and VLE availability to run simulations and access materials. Third, feedback is framed as capability building, with practical examples and simulation use reported to improve understanding and analytical skills. Fourth, a specific curriculum enhancement is proposed: adding a dedicated lecture on PV design and BESS, alongside guidance on safe and responsible AI use.

4.3. EAM outputs

Table 2 shows the EAM produced by TFE. The EAM is the main original result: it makes explicit the evidence-to-intervention chain and specifies indicators to be monitored in subsequent deliveries to assess whether the enhancements yield measurable gains. The EAM represents the primary analytical output of the TFE framework. It systematically converts evidence of tutor feedback into targeted module interventions and associated monitoring indicators.

Table 2. EAM derived from the tutor feedback worksheet (TFE output)

Worksheet evidence (case)	Linked design issue	Proposed intervention	Indicator to monitor
Simulation is vital; tutor demonstrated online network simulations (CEM-Q6).	Students need a bridge from equations to circuit behavior.	Embed weekly 'simulate-then-solve' tasks with short prompts and parameter checks.	Simulation task completion rate; reduction in recurrent network errors.
Modern laptops, VLE access, Wi-Fi, and smartboard support learning (CEM-Q15).	Access and usability determine whether digital tools support learning.	Standardize in-class device access; provide a minimum-kit checklist and offline alternatives.	VLE access logs; percentage able to run simulation in class.
Feedback always supports improvement and is used to improve delivery (CEM-Q19a, CEM-Q19b).	Feedback must be actionable and dialogic.	Introduce staged submission with one required 'response-to-feedback' note per student.	Turnaround time, response- to-feedback rate, and reduction in recurring errors.
Suggestion: dedicated lecture on PV design and BESS (CEM-Q21).	Need explicit integration of sustainability and contemporary systems early.	Add a PV+BESS mini-lecture, plus a worked example, to feed into the project brief.	Rubric scores on PV/BESS elements; student-reported relevance.
Tutor briefed students on safe AI use; risks of unverified outputs (CEM-Q23).	Generative AI changes how students draft and verify technical work.	Publish an AI use statement; require a 'verification steps' section in technical reports.	Incidence of unverifiable references; assessor notes on reasoning quality; integrity cases.

4.4. Explicit novelty statement

To distinguish prior knowledge from new contributions, there is a need to compare established findings with findings from this paper. In that way, original, testable output from this research can be clearly identified. Table 3 summarizes this comparison and also provides information on the novelty of this research.

Table 3. What is established versus what this study contributes (novelty statement)

Element	Established in prior work	New contribution in this study
Simulation-based learning	Simulation can improve conceptual understanding when used as a scaffold.	A worksheet-derived specification of 'simulate-then-solve' tasks with indicators.
Formative feedback	Timely, criterion-linked feedback supports learning.	Evidence-to-action mapping that turns 'feedback helps' into a defined routine + monitoring.
Resources and access	Digital access and infrastructure influence engagement.	A minimum-kit approach linked to feasibility indicators (VLE access and in-class capability).
Generative AI in higher education	AI can support learning, but may generate errors and integrity risks.	An AI-aware enhancement component is embedded within the improvement cycle and subject to verification requirements.
Use of QA documents	QA forms are common but often treated as compliance artifacts.	A reproducible TFE workflow and EAM template that converts a tutor sheet into an auditable plan.

5. DISCUSSION

Recent systematic reviews show that learning analytics can strengthen feedback practices when objectives, stakeholders, and action pathways are explicitly aligned [33], [34]. Evidence from reviews of student evaluations of teaching also warns that measurement limitations and contextual effects can undermine the credibility of evaluations when evaluation artifacts are treated as direct measures of teaching quality [35]. To mitigate these risks, dashboard research increasingly emphasizes pedagogically grounded design, transparency around data use, and interpretable outputs, including emerging AI-powered dashboards [36]–[38]. The TFE framework contributes to educational evaluation research by bridging the gap between routine quality assurance processes and research-oriented enhancement frameworks. While previous studies emphasize the importance of formative feedback and learning analytics, few studies provide an operational process linking evaluation artifacts to pedagogical redesign.

The closed-item profile indicates consistently positive perceptions of delivery quality, resources, and assessment readiness. This aligns with evidence that structured formative feedback and clear assessment signals can strengthen learning and performance in higher education [1]. The open comments further suggest that simulation is not merely an add-on but a central scaffold for building technical reasoning, consistent with recent simulation-focused work in engineering education [6], [7].

TFE adds value by making the enhancement logic explicit. Rather than reporting that 'simulation is helpful' or 'feedback is effective' claims already well supported in the literature, the EAM specifies what

will change, how it will be implemented, and what will be measured. This supports rigor by enabling future deliveries to test whether the proposed interventions produce observable improvements in engagement and assessment outcomes, and it complements learning analytics approaches that monitor engagement and the impact of interventions [2], [3], [16]. The tutor's emphasis on resources and classroom organization reflects on ongoing concerns that the benefits of technology-enhanced learning depend on access and usability. This is consistent with findings on e-learning challenges in engineering education, particularly when learners rely on digital platforms and simulations for core tasks [4], [5].

The AI-aware component addresses contemporary challenges in integrity and capability. Recent studies show that students view generative AI as both supportive and risky [12], and integrity-focused syntheses argue that clear policy, attribution, and assessment design are needed to maintain individual reasoning [13]. AI literacy frameworks further emphasize verification, evaluation, and responsible use, which TFE operationalizes through explicit verification-step requirements in technical reporting [14], [15]. Limitations are significant and should shape interpretation. The dataset comprises a single module and one complete tutor worksheet, so the results should not be generalized to effect sizes.

The closed ratings may also be subject to single-rater optimism or context-specific factors, and no direct student voice or longitudinal indicator data are analyzed in the present paper. These limitations mean that the contribution is primarily methodological: the proposed pipeline and EAM template are intended to be replicated and evaluated across cohorts and modules. Future studies should triangulate tutor evidence with student evaluations, learning analytics indicators, and assessment outcomes.

6. CONCLUSION

This study demonstrates that routine tutor feedback can be transformed into a structured evidence-to-action enhancement process using the TFE framework. By linking qualitative evidence with measurable improvement indicators, the framework offers a transparent and scalable approach to module development in engineering education. The case profile shows consistently strong delivery quality alongside concrete development priorities: simulation as the core learning scaffold; equitable access to devices, Wi-Fi, and VLE resources; dialogic feedback tied to error patterns; and input from PV and BESS to bolster renewable-energy design. Consequently, the EAM prioritizes simulate-then-solve routines, a minimum digital-access baseline, staged feedback tasks, and explicit AI-aware verification expectations in technical reporting. The contribution is methodological, offering an auditable, cost-effective enhancement pathway compatible with standard quality-assurance cycles and the existing evidence trail.

Future work will test the EAM interventions over at least two cohorts and, where possible, across comparable modules; establish coding reliability through independent raters; triangulate tutor evidence with student voice, engagement traces, and assessment artifacts; and assess whether the proposed indicators can detect meaningful change. Evaluating the AI-aware reporting requirement will focus on its impact on verification behavior and the quality of reasoning, without discouraging legitimate, transparent use of supportive tools. Rapid feedback loops and explicit delivery milestones will support timely, actionable results.

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This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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Nkaepe Olaniyi	✓	✓				✓		✓	✓	✓		✓	✓	✓

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The author declares that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

DATA AVAILABILITY

The authors confirm that the data supporting the findings of this study are available within the article and Appendix. The primary evidence used in the case study is the tutor feedback worksheet reproduced in Appendix, while the supporting secondary evidence is available through the cited references and their DOI links. No additional external dataset was generated for this study.

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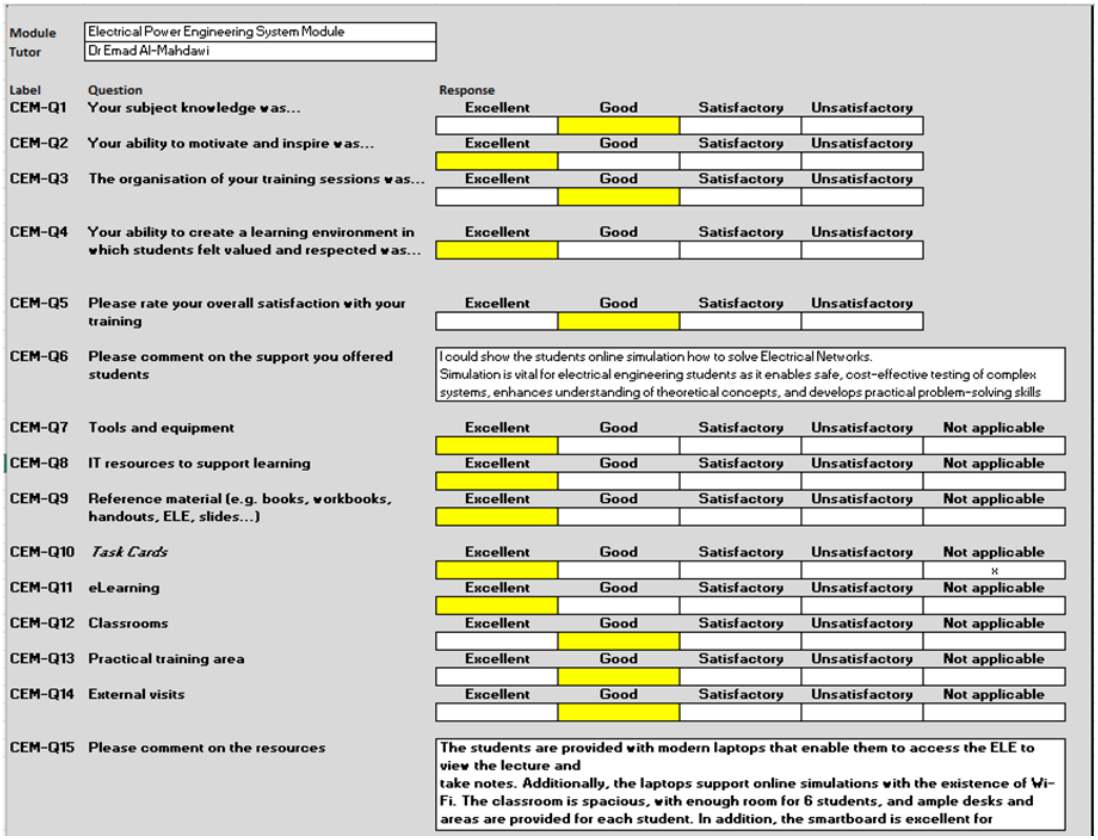
APPENDIX



Module	Electrical Power Engineering System Module					
Tutor	Dr Emad Al-Mahdawi					
Label	Question	Response				
CEM-Q1	Your subject knowledge was...	Excellent	Good	Satisfactory	Unsatisfactory	
CEM-Q2	Your ability to motivate and inspire was...	Excellent	Good	Satisfactory	Unsatisfactory	
CEM-Q3	The organisation of your training sessions was...	Excellent	Good	Satisfactory	Unsatisfactory	
CEM-Q4	Your ability to create a learning environment in which students felt valued and respected was...	Excellent	Good	Satisfactory	Unsatisfactory	
CEM-Q5	Please rate your overall satisfaction with your training	Excellent	Good	Satisfactory	Unsatisfactory	
CEM-Q6	Please comment on the support you offered students	I could show the students online simulation how to solve Electrical Networks. Simulation is vital for electrical engineering students as it enables safe, cost-effective testing of complex systems, enhances understanding of theoretical concepts, and develops practical problem-solving skills				
CEM-Q7	Tools and equipment	Excellent	Good	Satisfactory	Unsatisfactory	Not applicable
CEM-Q8	IT resources to support learning	Excellent	Good	Satisfactory	Unsatisfactory	Not applicable
CEM-Q9	Reference material (e.g. books, workbooks, handouts, ELE, slides...)	Excellent	Good	Satisfactory	Unsatisfactory	Not applicable
CEM-Q10	*Task Cards*	Excellent	Good	Satisfactory	Unsatisfactory	Not applicable (x)
CEM-Q11	eLearning	Excellent	Good	Satisfactory	Unsatisfactory	Not applicable
CEM-Q12	Classrooms	Excellent	Good	Satisfactory	Unsatisfactory	Not applicable
CEM-Q13	Practical training area	Excellent	Good	Satisfactory	Unsatisfactory	Not applicable
CEM-Q14	External visits	Excellent	Good	Satisfactory	Unsatisfactory	Not applicable
CEM-Q15	Please comment on the resources	The students are provided with modern laptops that enable them to access the ELE to view the lecture and take notes. Additionally, the laptops support online simulations with the existence of Wi-Fi. The classroom is spacious, with enough room for 6 students, and ample desks and areas are provided for each student. In addition, the smartboard is excellent for				

CEM-Q16	Which of the following were true about lesson / task learning objectives?	Objectives were not explained	Objectives were explained at the start of the module	Objectives were frequently explained (e.g. at the start of most lessons / tasks)	Learning objectives were frequently explained and linked to training / job role to help	Learning objectives were frequently explained and expertly used to support learning and agree goals /
CEM-Q17	Select the answer that best describes what the module enabled students to do, if anything	It did not enable students to understand new ideas or use new skills	It enabled students to understand some new ideas but did not	It enabled students to begin trying to use new skills	It enabled students to confidently use new skills	It enabled students to be thoroughly confident and practiced in using new skills
CEM-Q18	How well did the learning prepare students for the summative assessment(s)?	Students had some significant confusion and/or lack of preparation for	Students had a basic level of preparation for assessment	Students had an appropriate level of preparation for assessment	Students were fully prepared for assessment	Students had an expert-level of preparation for assessment
CEM-Q19a	Feedback you gave the students motivated and helped them to improve...	Always	Mostly	Rarely	Never	Not applicable
CEM-Q19b	Feedback you received from the students motivated and helped you to improve...	Always	Mostly	Rarely	Never	Not applicable
CEM-Q20	Please comment on your teaching, and its impact on students learning, assessment or feedback	I teach core electrical engineering topics using practical examples and simulations, which enhance student understanding. My assessments and feedback improve engagement, reinforce learning, and develop students' analytical skills.				
CEM-Q21	Do you have any comments for improving this module?	Yes, I suggest adding a dedicated lecture on PV panel design and battery energy storage systems to enhance students' understanding of renewable energy applications and modern electrical system integration.				
CEM-Q21a	Did any students require additional learning support during this module?	Yes	No	Don't know		
CEM-Q21b	*'Did the additional learning support meet their learning needs?*	Yes	No	Don't know		
CEM-Q21c	*'Please explain why the support did not meet their learning needs*					
CEM-Q22a	Did the students feel safe?	Yes	No	Don't know		
CEM-Q22b	*'Please explain why the students did not feel*					
CEM-Q23	Please record any other comments relating to your teaching experience for this module	I delivered two lectures on renewable energy design and planning for the first time. The students applied the taught concepts successfully in their projects, demonstrating strong engagement, sound understanding, and accurate calculations. Their positive response was very rewarding and provided useful evidence of the effectiveness of my teaching approach. I also explained how artificial intelligence can be used safely and responsibly, in line with Cranfield University guidance.				

BIOGRAPHIES OF AUTHORS

Emad Al-Mahdawi is a senior lecturer in the Department of Electrical and Mechanical. He holds a Ph.D. in Electrical Engineering and Systems and an MA (Distinction) in Education Management and Leadership from the University of Chichester. He is a Chartered Engineer with the IET and IMechE and a senior fellow of the Higher Education Academy (SFHEA). He is teaching and supervising MSc students of the Royal School of Military Engineering. His research endeavors encompass the study of electrical power system stability problems, renewable energy engineering, and the development of innovative teaching and learning methodologies. He has actively contributed to the academic community through publishing in internationally recognized conferences and journals indexed by Scopus. He can be contacted at email: Emad.almahdawi@midkent.ac.uk; emadalmahdawi@yahoo.com.

Nkaepe Olaniyi holds a Ph.D. in Optoelectronics and is a senior fellow of the Higher Education Academy. She brings experience in higher education teaching, curriculum design, and blended and online delivery. In management roles, she has overseen civilian lecturing teams (MKC TS Ltd) and collaborated with military colleagues to assure academic standards within the Professional Engineering Wing at the School of Military Engineering, delivering accredited B.Eng. and MSc. programs for military learners. Her research spans STEM pedagogy and computing, including technology-enhanced learning, security regulation, network security, and software engineering, with work on flipped classrooms threshold concepts, active learning, and self-efficacy. She can be contacted at email: Nkaepe.olaniyi@midkent.ac.uk.