University of Tabuk

Faculty of Engineering

Electrical Engineering Department

Bachelor of Science in Electrical Engineering

Operation Plan

(2022-2023)

August, 2022

Contents

1. **Introduction**

   Founded in 2007 (1428H), the Department of Electrical Engineering initially offered a single undergraduate program, namely the Bachelor of Science in Electrical Engineering Program (BSc EEP). The first cohort of students was admitted during the academic year 2008-09 (1429H-1430H). However, four years ago, the department expanded its offerings, introducing a second program for graduate students. The BSc EE program maintains a duration of five years, culminating in the award of a Bachelor of Science in Electrical Engineering degree upon successful completion of program criteria and university requirements. The BSc program align with the missions and goals of the University of Tabuk and the Faculty of Engineering. Graduates from these programs are well-placed in various roles within public and private sectors. The BSc EEP holds accreditation from the Engineering Accreditation Commission of ABET.

   ABET Web URL: https://www.abet.org/".

   EE Department Web Link: https://www.ut.edu.sa/en/Faculties/engineering/Electrical/Pages/default.aspx

   Guided by its mission and goals, the BSc in Electrical Engineering program sets its annual operational plan to ensure that the program's objectives are effectively implemented and achieved. This document introduces a set of initiatives measured by performance indicators, steering the program towards the achievement of its goals. It outlines specific strategies encompassing educational enhancement, moral values installation, social responsibility, community engagement, and a dedicated focus on contributing to the economic prosperity of the country.

2. **Development of the Operational Plan**

   Crafted by the Quality Committee of the Department of Electrical Engineering and endorsed by the department council, the operational plan for the Bachelor of Science in Electrical Engineering program plays a pivotal role in guiding resource allocation, setting timelines, establishing goals, identifying risks, and shaping strategic initiatives. Specifically tailored for the BSc EEP, the plan serves as a comprehensive roadmap, detailing actions, strategies, and Key Performance Indicators (KPIs) to achieve program goals and elevate overall quality. With formal approval affirming its significance, this operational plan ensures that the program's mission and goals intricately guide all operations and activities, embodying a commitment to excellence and continuous improvement.

3. **Program Constituencies**

   The program constituents are those who must be satisfied with the performance of the Electrical Engineering program. The significant groups of constituencies of the program are:

- Faculty: EE faculty members are involved, on regular basis, in the assessment processes, advising, supervising, etc.
- Students: Current EE students are interested in whether the EE program adequately prepares them for future employment.
- Alumni: This group consists of recent graduates who have been graduated from the EE department with B.SC. degree. They should have the incentives to assess the quality of the program based on their career achievements.
- Employers (government, industry and universities): Employers' satisfaction with our students' education provides measure of the program success. Their satisfaction translates to employment opportunities for our students.

4. Vision of the University of Tabuk, Faculty of Engineering, and BSc EEP

4.1 University of Tabuk Vision

A university that is educationally and academically distinguished which cooperated in community service.

4.2 Faculty of Engineering Vision

A distinguished and pioneering college locally and internationally in the field of engineering education, innovative research, and building a knowledge society.

4.3 Department of Electrical Engineering (BSc EEP) Vision

To become a leading department that produces ethical and professional leaders who are equipped with the skills and knowledge to drive societal and economic growth through innovative research and development.

4.4 Alignment of the Visions

The following table gives the alignment of the visions by mapping the keywords of the University of Tabuk with the Faculty of Engineering and Electrical Engineering Department (BSc EEP).

Keywords	University of Tabuk	Faculty of Engineering	Department of Electrical Engineering
Institution	A **university** that is **educationally** and academically	A **distinguished** and pioneering **college** locally and internationally in the	To become a **leading department** that produces ethical and professional leaders
Distinguished			

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	distinguished which cooperated in community service	field of engineering education, innovative research, and building a knowledge society	who are equipped with the skills and knowledge to drive societal and economic growth through innovative research and development.
Education **Community** **Research**			

5. Mission of the University of Tabuk, Faculty of Engineering, and BSc EEP

5.1 University of Tabuk Mission

To offer a distinguished university education that meets the needs of society and the job market through an attractive educational, administrative, and technical environment that supports research and innovation.

5.2 Faculty of Engineering Mission

To graduate qualified engineers in accordance with the International Academic Standards and prepare them to meet the changing needs of society. These graduates will be able to compete locally and internationally. The Faculty of Engineering is committed to providing excellent education and pursuing relevant scientific research and partnership with industry and governmental societies.

5.3 B.Sc. in Electrical Engineering Program (BSc EEP) Mission

To offer a comprehensive education that develops technical and professional engineering skills, instills moral values and ethical behavior, and motivates and prepares students to engage in research and community service.

5.4 Alignment of the Missions

The following table gives the alignment of the missions by mapping the keywords of the University of Tabuk with the Faculty of Engineering and BSc EEP.

Keywords	University of Tabuk	Faculty of Engineering	BSc EEP
Needs of society	To offer a distinguished university education that meets the **needs of society** and the job	To graduate qualified engineers in accordance with the International Academic Standards and prepare them to meet the changing **needs**	To offer a **comprehensive education** that develops technical and professional engineering skills, instills

Excellent education	market through an **attractive educational**, administrative, and technical environment that supports **research** and innovation.	**of society**. These graduates will be able to compete locally and internationally. The Faculty of Engineering is committed to providing **excellent education** and pursuing relevant scientific **research** and partnership with industry and governmental societies.	moral values and ethical behavior, and motivates and prepares students to engage in **research** and **community service**.
Research			

6. Goals of the University, College, and Program

6.1 University Goals

UG1: To provide a distinguished university education that meets the needs of the labor market.

UG2: To support innovative research to contribute to building a knowledge economy.

UG3: To promote social responsibility and community partnership.

UG4: Sustainability of infrastructure and technology for an attractive educational environment.

UG5: Effective governance and management.

UG6: Diversify innovative financing sources and achieve expenditure efficiency.

6.2 Faculty of Engineering Goals

CG1: To deliver distinguished academic education that meets the needs of the labor market.

CG2: Providing creative research to contribute to building the knowledge economy of society.

CG3: Effective contribution to sustainable development and community service.

CG4: Offer a stimulating and attractive learning environment.

CG5: Develop an effective administrative and organizational environment in the college.

CG6: Providing innovative financing sources.

6.3 BSc EE Program Goals

- **PG1**: Produce Competent Electrical Engineers:

This goal focuses on the primary educational mission of your EE program, which is to provide students with the knowledge, skills, and expertise required to become competent electrical engineers. It emphasizes that graduates should have a strong foundation in electrical engineering principles, problem-solving abilities, and technical proficiency.

- **PG2**: Inculcate Moral Values and Professionalism Among Students:

This goal extends beyond technical competence and emphasizes the importance of ethics and professionalism in the education of future electrical engineers. It underscores the need to instill ethical values, integrity, and a sense of responsibility among students, preparing them not only as skilled engineers but also as individuals who prioritize ethical conduct in their professional lives.

- **PG3**: Engage Students in Community Services:

This goal highlights the program's commitment to social responsibility and community engagement. It seeks to encourage students to apply their engineering knowledge and skills to benefit their communities through service projects and initiatives. Engaging in community services helps students develop a broader perspective and a sense of civic duty.

- **PG4**: Empower Graduates to Contribute Towards Economic Prosperity of the Country

This goal emphasizes the broader societal impact of the EE program. It aims to empower graduates with the capabilities, innovation, and entrepreneurial mindset needed to make meaningful contributions to their country's economic development. Graduates are expected to use their engineering expertise to drive technological advancements, create job opportunities, and stimulate economic growth.

6.4 Mapping the goals and the mission of BSc EEP

The goals of the BSc EEP are formulated based on its mission, and the alignment between the program objectives and the mission is outlined in the table below.

Program Goals	Alignment with Program Mission
PG1: Produce competent Electrical Engineers	Aligns with the mission's emphasis on comprehensive education and technical skills development.
PG: Inculcate moral values and professionalism among students	Directly aligns with the mission's focus on instilling moral values and ethical behavior.
PG3: Engage students in community services	Corresponds with the mission's objective of motivating students to engage in community service.
PG4: Empower graduates to contribute towards economic prosperity	Indirectly aligns with the mission through comprehensive education and preparation for research and innovation.

6.5 Alignment of Goals

The following table gives the alignment of the goals of the University of Tabuk with the Faculty of Engineering and BSc EEP.

BSc EEP Goals	Faculty of Engineering Goals						University of Tabuk Goals					
	CG1	CG2	CG3	CG4	CG5	CG6	UG1	UG2	UG3	UG4	UG5	UG6
PG1	✓						✓				✓	
PG2				✓	✓					✓	✓	
PG3			✓						✓			
PG4		✓				✓		✓				✓

7. The Operational Plan of the BSc EE Program

In this section, we develop initiatives that are aligned with the goals of the B.Sc. in Electrical Engineering (EE) program. These initiatives aim to provide a structured and actionable plan for achieving the program's goals, breaking down each strategy into actionable steps or projects. The strategic action plan is designed to serve as our roadmap, offering a structured and measurable approach to attain program goals, foster student success, and contribute to the betterment of our community and country. To monitor the progress, we have established 19 Key Performance Indicators (KPIs) specific to this operational plan, serving as measurable benchmarks. Regularly tracking these KPIs is crucial for evaluating the program's effectiveness in achieving overarching goals, ensuring alignment with our mission, and remaining flexible for necessary adjustments. This commitment to continuous improvement and educational excellence is evident in our outlined initiatives, actions, and Key Performance Indicators (KPIs) for each program goal presented in the four tables below.

7.1 Program Goal 1

PG1: Produce competent Electrical Engineers.

Initiative	Action	Responsibility	Implementation timing		IP (Index performance)	Target	Resources required
			Beginning	end			
Enhance Educational Curriculum through curriculum Review and Update	Review and update the curriculum to identify gaps and align with FE exam standards.	Committees and councils concerned with updating the plan	The beginning of the first semester	The end of the first semester	Percentage of Electrical and Computer FE exam topics incorporated into the EE curriculum	90%	
Hands-On Learning through Laboratory Enhancement.	Evaluate labs, identify improvements, assess resource needs, prioritize enhancements, and create a plan for lab improvements.	Lab Committee, EE Department chair, Faculty Dean	Beginning of the first semester	The end of the first semester	Completion rate of the development plan for laboratories	50% completion of the development plan	Faculty Dean
	Incorporate hands-on projects into relevant courses.	Faculty Members	Beginning of the first semester	The end of the second semester	Students' evaluation of the facilities and equipment available to complete their projects	80% Rate of satisfaction	

7.2 Program Goal 2

PG2: Inculcate moral values and professionalism among students.

Initiative	Action	Responsibility	Implementation timing		IP (Index performance)	Target	Resources required
			Beginning	end			
Ethics and Professionalism Modules	Integrate ethics and professionalism into department-specific courses within the study plan.	Faculty Curriculum Committee	Beginning of the first semester	The end of the first semester	Number of courses in the curriculum plan that incorporate moral values and ethics.	3	
Professional Development Programs	Organize workshops or seminars on professional ethics and values.	SDP Committee EE Department Chair	Beginning of the first semester	The end of the second semester	Number of workshops organized	2	
					The ratio of SDP students who participated in the ethics seminar to the overall number of SDP students.	80%	
					Students' satisfaction with the workshop	80% satisfaction rate	
	Arrange and coordinate a guest speaker lecture focusing on professional ethics and values.	EE Department Chair	Beginning of the first semester	The end of the second semester	Students and Faculty member' evaluation of guest speaker	80% satisfaction rate	

7.3 Program Goal 3

PG3: Engage students in community services.

Initiative	Action	Responsibility	Implementation timing		IP (Index performance)/outcome 0f action	Target	Resources required
			Beginning	**end**			
Instilling the importance of participating in community service	Develop awareness workshops for students related to the opportunities and importance of community service.	EE department chair	Beginning of the first semester	The end of the second semester	Number of awareness workshops	2	
Service-Learning Integration	Identify local community needs and potential projects suitable for student involvement	EE department chair	Beginning of the first semester	The end of the first semester	Report on Identifying Community Needs	100% completion of the report.	Dean
	Establish partnerships with community organizations.	EE Department Chair.	Beginning of the first semester	The end of the second semester	No. of community service programs organized by the program with the participation of students	3	
					No. of students participated in the community service programs every year	20	
	Incorporate service-learning projects into relevant courses.	Faculty Members	Beginning of the first semester	The end of the second semester	Number of courses in the curriculum plan which inculcates service-learning projects	3	

7.4 Program Goal 4

PG4: Empower graduates to contribute towards economic prosperity of the country.

Initiative	Action	Responsibility	Implementation timing		IP (Index performance)/outcome 0f action	Target	Resources required
			Beginning	**end**			
Industry Partnerships and Internships	Establish partnership with industry	Dean	Beginning of the first semester	The end of the second semester	Number of established industry partners	3	Dean
	Present the benefits of collaboration and internship opportunities.		Beginning of the first semester	The end of the second semester	Stakeholders' evaluation of collaboration and internship	80% satisfaction rate	
	Develop an internship program with industry partners.	EE Department Chair	Beginning of the first semester	The end of the second semester	The percentage of students engaged in internships to the total number of students undergoing summer training.	30%	Faculty Dean
Entrepreneurship Support	Offer courses to students that focus on entrepreneurship.	Committees and councils concerned with updating the plan	Beginning of the first semester	The end of the first semester	Number of courses and/or modules in the curriculum plan which focused on entrepreneurship	1	
	Develop workshops for students related to entrepreneurship development.	SDP Committee, EE department Chair	Beginning of the first semester	The end of the second semester	Students' satisfaction with the workshop	80%	
					The percentage of SDP students who participated in the Entrepreneurship Development workshops.	80%	

8. Relation between BSc EEP goals and NCAAA program KPIs

While the program has established 19 Key Performance Indicators (KPIs) tailored to assess the attainment of operational plan goals, it is noteworthy that the 17 program-specific KPIs outlined by NCAAA can also serve as an effective evaluation tool for the program goals. Many of these NCAAA KPIs directly align with and are highly relevant for assessing the operational plan goals. Additionally, some KPIs, while not directly tied, can still offer valuable insights related to the program goals. The subsequent table meticulously maps the most pertinent NCAAA KPIs, providing a more direct and comprehensive measure of progress toward achieving these goals. This dual approach enhances the program's ability to gauge success and effectiveness by leveraging both internally defined KPIs and those established by the accrediting body.

Program Goal	KPI code	NCAA KPI
PG1: Produce competent Electrical Engineers.	KPI-P-04	Completion rate
	KPI-P-06	Students' performance in the professional and/or national examinations
	KPI-P-07	Graduates' employability and enrolment in postgraduate programs
	KPI-P-08	Average number of students in the class
	KPI-P-09	Employers' evaluation of the program graduates proficiency
PG2: Inculcate moral values and professionalism among students.	KPI-P-02	Students' Evaluation of quality of learning experience in the program
	KPI-P-03	Students' evaluation of the quality of the courses
	KPI-P-10	Students' satisfaction with the offered services
PG3: Engage students in community services.	KPI-P-12	Percentage of teaching staff distribution
	KPI-P-14	Percentage of publications of faculty members
	KPI-P-16	Citations rate in refereed journals per faculty member
PG4: Empower graduates to contribute towards economic prosperity of the country.	KPI-P-05	First-year students retention rate
	KPI-P-15	Rate of published research per faculty member
	KPI-P-17	Satisfaction of beneficiaries with the learning resources

9. Analysis of the Operational Plan Indicators

The BSc EEP utilizes 19 specific KPIs developed for the operational plan to track progress towards its mission and program goals. At the end of the designated operational plan period, a report titled "Report on the Implementation of the Operational Plan (2022-2023) and Analysis of its KPIs" is prepared, serving as a follow-up. The collected data is carefully analyzed to identify strengths and areas for improvement, leading to continuous enhancement in the subsequent academic year. Based on analysis findings, actionable recommendations are formulated to guide the development of a comprehensive action plan for improvement. This plan outlines specific steps to address identified areas for improvement, ensuring a commitment to delivering the highest quality education.

In a separate report, the program analyzes the 17 mandatory program KPIs set forth by the National Center for Academic Accreditation and Evaluation (NCAAA) / Education and Training Evaluation Commission (ETEC) for academic program accreditation. Titled "Program KPIs Analysis Report," this report evaluates these KPIs annually, with results recorded in the Annual Program Report (APR).

10. Action Plan for Improvement

The BSc EEP identifies the actions to be taken to improve in the subsequent year in the following table.

One Year Action Plan for Improvement				
Source: Analysis of Operational Plan KPIs				
Action	Responsibility	Time frame		Notes
		Start	Complete	
1.				
2.				

11. Approval of the Operational Plan

	Prepared by	Approved by
	Quality Committee	EE Department Council
Date:	August 2022	Nov 2023