Annual Program Report

— (Bachelor)

Program: Bachelor of Science in Electrical Engineering	
Program Code (as per Saudi Standard Classification of Educational Levels and Specializations): 071301	
Qualification Level: 6	
Department: Department of Electrical Engineering	
College: Faculty of Engineering	
Institution: University of Tabuk	
Academic Year: 2022-2023	
Main Location: Tabuk, Saudi Arabia	
Branches offering the Program (if any): ● Not Applicable	

Table of Contents

A. Program Statistics

Item	Number
Number of students enrolled in the program	207
Number of students who started the program (in reporting year)	46
Number of students who completed the program	38

B. Program Assessment

1. Program Learning Outcomes Assessment and analysis according to PLOs assessment plan *

#	Program Learning Outcomes	Assessment Methods (Direct and Indirect)	Targeted Performance (%)	Assessment Results
Knowledge and Understanding				
K1	Demonstrate knowledge and comprehension with both breadth and depth in the underlying theories, principles, and concepts of electrical engineering and science.	Direct: Exams Indirect: Exit Survey	60%	Direct: 1st Trim.: 69.61% 2nd Trim.: 68.66% 3rd Trim.: 76.76% Average: 71.68% Indirect: 68.60% 71.68% Target Achieved High
Skills				
S1	An ability to identify, formulate, and solve complex engineering problems by applying principles of electrical engineering, science, and mathematics.	Direct: Exams Indirect: Exit Survey	60%	Direct: 1st Trim.: 64.38% 2nd Trim.: 64.34% 3rd Trim.: 71.47% Average: 66.73% Indirect: 60.00% 66.73% Target Achieved Low
S4	An ability to communicate effectively with a range of audiences.	Direct: Performance Indicators and Rubric: Written Communication: PI.S4.1a: Produce a quality of writing. PI.S4.2a: Organize the content in a logical fashion. PI.S4.3a: Use graphs, figures, tables, and equations. Oral Communication:	60%	Direct: PI.S4.1a: 88% PI.S4.2a: 68% PI.S4.3a: 76% PI.S4.1b: 60% PI.S4.2b: 76% PI.S4.3b: 80% PI.S4.4b: 36% Average: 69.14% Indirect:

		PI.S4.1b: Produce a quality of writing. PI.S4.2b: Organize the content in a logical fashion. PI.S4.3b: Use graphs, figures, tables, and equations. PI.S4.4b: Respond well to questions. Indirect: Exit Survey		55.00% 64.90% Target Achieved Low
Values, autonomy, and responsibility				
V3	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	Direct: Performance Indicators and Rubric: PI.V3.1: Identify the type of information needed for problem or task. PI.V3.2: Apply appropriate strategies to acquire knowledge. PI.V3.3: Demonstrate an ability to use information to solve a problem. Indirect: Exit Survey	60%	Direct: PI.V3.1: 76% PI.V3.2: 72% PI.V3.3: 72% Average: 73.33% Indirect: 85.00% 76.83% Target Achieved High

*Attach a separate report on the program learning outcomes assessment results for male and female sections and for each branch (**if any**). There is no female section.

More details about the assessment results, their analysis, and recommendations for improvement at the course level and the program level are presented in the attached 'PLO Assessment Report 2022-2023'

Strengths:

1.   Program learning outcome K1 related to knowledge and of the theories, principles, and concepts of electrical engineering and science.

2.   Program learning outcome V3 related to acquiring and applying new knowledge.

Aspects that need improvement with priorities:

1.   Method of assessment of PLOs S4 and V3 from the Senior Design Project (SDP) needs to be revised to avoid inconsistent and conflicting results.

2.   Program learning outcome S4 related to communication skills require actions for improvement.

More details about the recommendations for improvement at the course level and the program level are presented in the attached 'PLO Assessment Report 2022-2023'

2. Students Evaluation of Courses

1. The electrical engineering department obtained the Evaluation of the courses using the Mear Plus platform which is an electronic platform provided by the deanship of quality.

2. The EE faculty members generated developmental recommendations based on the students' evaluations of the courses and their comments throughout the course.

3. The Evaluation of Courses is dependent on most courses offered during the academic year (2022/2023).

Course Code	Course Title	Number of Students Who Evaluated the Course	Percentage of Participants	Evaluation Results	Developmental Recommendations
ELEN0200	Electrical Circuits I	23	63.9%	9.75	None
ELEN0202	Electrical Circuits II	34	77.27%	9.84	None
ELEN0203	Electrical Circuit Lab	4	11.4%	10	None
ELEN0204	Measurements and Instruments	13	59.1%	9.65	None
ELEN0210	Electronics I	5	16%	10	None
ELEN0220	Complex Analysis and Discrete Math	15	20%	8.63	None
ELEN0224	Probabilistic Methods in EE	15	38%	8.8	Avoided negative comments (Done) Too many HWs (Now it is optional and are used to help students to practice solving problems)

Course Code	Course Title	Number of Students Who Evaluated the Course	Percentage of Participants	Evaluation Results	Developmental Recommendations
ELEN0230	Signals and Systems	7	50%	8	None
ELEN0232	Control Systems	3	60%	10	None
ELEN0233	Control Lab	10	34.5%	9	Relating the course contents with the practical reality.
ELEN0240	Electromagnetic I	7	18.92%	8.8	None
ELEN0250	Logic Design	13	50%	8.3	None
ELEN0251	Digital Logic Lab	6	16.7%	8.8	None
ELE0260	Communications Engineering I	8	62% 3.6		None
ELEN0310	Electronics II	16	84.2%	9.45	
ELEN0311	Electronics lab	4	66%	8.36	None
ELEN0322	Numerical Methods	6	46%	9	None
ELEN0326	Engineering Programming	12	60%	9.3	None
ELEN0330	Digital Signal Processing	10	62.5%	9.5	None
ELEN0331	Scientific Computing	12	80%	8.86	None
ELEN0340	Electromagnetic II	5	17.9%	7.4	None
ELEN0341	Electromagnetic LAB	3	21.4%	9.7	
ELEN0352	Embedded Systems	10	50%	9	None
ELEN0361	Communications Lab	3	21.4%	9.5	None

Course Code	Course Title	Number of Students Who Evaluated the Course	Percentage of Participants	Evaluation Results	Developmental Recommendations
ELEN0370	Electrical Machines	18	64%	9.5	None
ELEN0372	Electric Energy Engineering	11	47.8%	9.8	None
ELEN0373	Electric Machines and Energy Lab	4	100%	9.5	None
ELEN0410	Power Electronics	8	72%	9.1	None
ELEN0412	Power Electronics Applications	5	50%	9.2	None
ELEN0436	Industrial Motor Control	8	100%	7.97	Add a practical component to the course.
ELEN0470	Power Systems Operation and Control	21	88%	9.2	None
ELEN0472	Protection of Power Systems	16	89%	9.2	None
ELEN0474	Power Systems Analysis	4	57.14%	8.64	None
ELEN0476	Renewable Energy and Smart Grids	5	29%	10	None
ELEN0480	Fundamentals of Energy Efficiency	6	100%	6.81	None

3. Students Evaluation of Program Quality

Evaluation Date: End of Trimester 3	Number of Participants: 25
Students Feedback	Program Response

Strengths: ● The academic infrastructure is attractive and comfortable with appropriate Multimedia (projector) learning facilities. ● The Lab and research facilities provided by the program ensure safety and security. The program has appropriate safety and fire-fighting measures in place in the academic and laboratory buildings. ● The program curriculum fulfills the educational, scientific, technical, and professional development needs. ● The orientation program helps fresh students at the start of their academics. ● The program's program registration and communications surveys reflect that the students easily access the information about the university and its programs before course registration. ● The program publishes the code of conduct, rights and duties, academic policies, and grievance redressal mechanisms. ● Confidentiality and transparency are maintained in keeping the academic record of the students. ● The overall quality of the program is at par with other national and international institutions	
Areas of Improvement: ● Industrial visits should be increased by the program to enrich the skills of students including the motivation for higher education and lifelong learning and site visits. ● As a part of Learning Experience and Resources, the program needs to improve upon the internet and a sufficient number of the latest computers and software.	**Requests will be made to the respective divisions to take necessary actions.**
Priorities for improvement: ● Industrial visits should be increased by the program to enrich the skills of students	**The department made a recent upgrade, to Computer lab, tables and new computers.**

including the motivation for higher education and lifelong learning and site visits.	**Filed trips will be increased the next year.**
• As a part of Learning Experience and Resources, the program needs to improve upon the internet and a sufficient number of the latest computers and software.	

4. Scientific research and innovation during the reporting year

Activities Implemented	Number
Published scientific research	65
Current research projects	7
conferences organized by the program	0
Seminars held by the program	0
Conferences attendees	2
Seminars attendees	7

Discussion and analysis of scientific research and innovation activities:

Research activities during this academic year show that the faculty members were actively engaged in their respective research areas. One of the reasons is that the university requires the faculty members to publish their work in well-reputed journals to get promoted. However, the program lacked in holding conferences and seminars during this academic year. To increase research activities, it is highly recommended that the program encourages the faculty members to get involved in multidisciplinary research teams.

5. Community Partnership

Activities Implemented	Brief Description*
Summer Training	The summer training course, which is a compulsory component of graduation requirements, establishes partnerships with local companies, electrical utilities, or research institutions to provide internship opportunities for electrical engineering students. This allows students to gain practical experience and exposure to real-world projects. The department has contracted with about 200 companies for summer training. Usually, the training starts in summer and lasts for six weeks long. This year there were (40) students who completed the training course by 29/08/2022.
Industrial Donations	Seek partnerships with local companies to secure donations or sponsorships of electrical engineering projects and facilities. This provides students with access to state-of-the-art resources and fosters stronger ties with the local industry. The FE and the EE department have great sponsorships from B.A.E systems on supporting senior design

	projects. Also, the company celebrates engineering day with the FE, provides prizes for the best projects, and introduces workshops for undergraduate students:
Industrial Workshops	X
Scholarship Programs	Establish scholarships or financial aid programs specifically for local students pursuing electrical engineering degrees. This helps promote access to education and supports the development of the local talent pool. UT provides scholarships for non-Saudi. The students can enter the electronic portal of the UT to apply for admission to the university via the following link: https://myut.ut.edu.sa/ut/init.
Training Courses	• The program conducts a community outreach initiative, faculty and program students visited local high school students, and introduced them to the field, and conducting experiments and workshops. • The Renewable Energy & Energy Engineering Center (REEEC), which is supervised by one of the department members Dr/ Hani, have organized many training courses: "Design medium & small PV systems" The training course was held during 28 Aug- 8 Sept. 2022 and the number of attendees was (19 participants).
Senior Design Projects	Engage with local problems to identify potential electrical engineering projects that students can work on as part of their capstone or senior design projects. This collaboration provides students with hands-on experience while addressing the needs of the community. Here are some project titles for this academic year: ● "Smart Parking Monitoring Based on IoT" supervised by Dr/Hani. ● "Low Power Charging Station Design for EV" supervised by Dr/ Fahd Almasoudi.

* including timing of implementation, number of participants, and outcomes.

Comment on community partnership activities**

> The overall performance of the program in these activities is fair. However, more activities are recommended. Each of these activities, when executed effectively, not only benefits the students and the program but also strengthens the ties between the educational institution and the community it serves. This collaboration is essential for creating a skilled workforce, fostering innovation, and addressing the evolving needs of society and industry.

** including overall evaluation of the program's performance in these activities (if any).

6. Other Evaluation (if any)

(e.g., independent reviewer, program advisory committee, and stakeholders (e.g., faculty members, alumni, and employers)

Evaluation method: Surveys	Date: End of Trimester 2	Number of Participants: 25
Summary of Evaluator Review		Program Response
Strengths: ● The program mission is compelling, achievable, clear, and consistent with the mission of the college and institute. The program mission and		Nothing to address.

objectives are appropriately articulated and reflected in the curriculum and learning outcomes.
- The program objectives are clear, they support the mission and align with the goals of the college and institute. They give directions to the program and are measurable in a predefined time frame.
- The program's curriculum plan is at par with the needs of the job market.
- The program's learning outcomes are consistent with NQF, academic standards, and labor market needs. The program conducts a periodic and comprehensive evaluation of the curriculum plan and learning outcomes.

Points for Improvements:
- The number of respondents should be increased.
- The alignment of the program mission with Saudi Vision 2030 should be reviewed.
- The program LOs need to be widely published and shared with stakeholders.

Suggestions for development:
- The alignment of the mission with Saudi Vision 2030 should be checked in the next review cycle.
- The program needs to share and publish the learning outcomes widely and make sure that the stakeholders are aware of the LOs.

* Attach independent reviewer's report and stakeholders' survey reports (if any).

C. Program Key Performance Indicators (KPIs)

Including the key performance indicators required by the NCAAA.

No	KPI	Targeted Value	Actual Value	Internal Benchmark	Analysis	New Target
1	Percentage of achieved indicators of the program operational plan objectives	70%	79%	NA	The actual benchmark achieved the target and exceeded the external benchmark. The KPI is taken as achieved.	85%
2	Students' Evaluation of quality of learning experience in the program	3.75	4.04	3.92	The actual benchmark achieved the target and exceeded the internal and external benchmarks. The KPI is taken as achieved. The KPI is taken as achieved and considered as the program's strength.	4.0
3	Students' evaluation of the quality of the courses	3.75	4.01	3.94	The actual benchmark meets the target and the internal and external benchmarks. The KPI is taken as achieved.	4.0
4	Apparent completion rate	60%	51.2%	30%	The actual benchmark is short of the target, exceeds the internal benchmark but short of the external benchmark. More emphasis on math and Electrical design courses needs to be made.	60 %
5	First-year students retention rate	90 %	97.8%	100 %	The KPI is achieved, the actual benchmark is more than the target, short than the internal benchmark;	90 %

No	KPI	Target	Actual Benchmark	External Benchmark	Analysis	New Target
					but exceeds the external benchmark The KPI is achieved.	
6	Students' performance in the professional and/or national examinations	40%	40%	N/A	The percentage of students or graduates who were successful in the Fundamentals of Engineering (FE) examination has achieved the target. The average FE score of 30.94. *NOTE1: Passing score of the FE is 70%. Note2: The reported results are the first attempt for the student who are expected to graduate that year.*	40%
7	Graduate's employability and enrollment in postgraduate programs	40 %	36.6% (a) 15.8% (b) 10.8%	84 %	The employability ratio is short of the target and the internal benchmarks. The data of some graduates could not be collected due to the poor response of the graduates to the communication requests from the program. The KPI is not achieved, and the actual benchmark is short of the target and the benchmarks, hence it is identified as the weakness of the program.	40 %
8	Average number of students in the class	25	14.7	25	The number of students in the class is below the target. It is lower than the internal and external benchmarks. It is achieved.	25

9	Employers' evaluation of the program graduates' proficiency	3.75	4	3.56	The employer evaluation of the graduates meets the target, internal benchmark, and benchmark. It is the strength.	4
10	Students' satisfaction with the offered services	3.75	3.82	3.24	The students' satisfaction with the offered services meets the target, internal benchmark, and external benchmark. It is a strength.	4
11	Ratio of students to teaching staff	15:1	9:1	20:1	The ratio of the students to teaching staff met the target, internal, and external benchmarks. The KPI is taken as achieved. It is a strength.	15:1
12	Percentage of teaching staff distribution (Doctoral Qualification)	85%	95.5%	90 %	The actual benchmark meets the target and the external benchmark. So, the KPI is taken as achieved.	90%
13	Proportion of teaching staff leaving the program (Other than Retirement)	≤5%	4%	0 %	The faculty left the EE department for reasons other than retirement. The KPI is achieved	≤5%
14	Percentage of publications of faculty members (Percentage of Faculty who Published at least one paper)	65 %	77.27%	44 %	The publications of faculty met the target, internal, benchmarks. The KPI is achieved	80 %
15	Rate of published research per faculty member	2	2.95	1.88	The actual benchmark met the target and the internal benchmarks. The KPI is achieved	3

16	Citations rate in refereed journals per faculty member	5	11.7	41	The citation rate per faculty member has met the target. But it is low to internal and benchmark.	6
17	Satisfaction of beneficiaries with the learning resources	3.75	3.9	4.27	The actual benchmark meets the target and the external benchmark but is less than the internal benchmark.	4

Comments on the Program KPIs and Benchmarks results:

The program is progressing well as most of the KPIs have been met. However, a few KPIs were not achieved, although most of them were very close to the level of achievement. KPI 6, which evaluates students' performance in professional and/or national examinations, is the one that the program has the most concern about. The faculty of engineering has arranged a partnership with Kaplan to provide students with access to FE exam platform. As students took the FE exam for the first time, their level of preparedness was low. However, this can be improved in upcoming years; as the program is arranging FE exam sessions to prepare students for the FE exam. KPI 4, which indicates completion rate, shows a lower level than the target, indicating that students were not well-prepared to study engineering, especially in their high-school mathematics and physics courses. This has also been reflected in Electrical engineering evaluations. KPI 7 also shows a lower level of achievement, which might be due to a lack of communication with alumni.

Additionally, it's important to develop a process to conduct all required surveys according to a specific timeline and analyze the data to evaluate the program.

D. Challenges and difficulties encountered by the program (if any)

Teaching	None
Assessment	Response to completing surveys is weak.
Guidance and counseling	None
Learning Resources	None
faculty	None
Research Activities	None
Others	None

E. Program development Plan

In this section, we propose initiatives aimed at enhancing the overall BSc EE program, including the achievement of Program Learning Outcomes (PLOs), Program Key Performance Indicators, and Operational Plan Key Performance Indicators, as well as addressing any identified areas of improvement. The proposed actions represent the culmination of insights gathered through various **workshops** conducted by the BSc EE program committees and the EE department council. Recommendations are derived from course reports, PLO assessment forms, advisory board meetings, KPI analysis reports, Operational Plan implementation and analysis reports, as well as the results of opinion surveys and direct oral feedback provided by faculty members during these workshops. Collectively, these inputs have shaped the comprehensive action plan outlined in the table below. The annual program report, including this action plan, must receive final approval from the department council, marking the conclusion of this strategic endeavor.

NO	Priorities for Improvement	Actions	Action Responsibility
1.	Improve the attainment level of PLO(S1) and PLO(S2)	Initiate Voluntary Tutorial Sessions whether through live sessions or recorded videos for problem-solving and circuit/system design	Department chair and EE Faculty members
2.	Improve the attainment level PLO(S2)	Update CLOs of Electronics II to include design topics	Curriculum Committee and Electronics instructors
		Offer Electronics II course considering the updated contents	Department Chair and Course Instructor
3.	Improve the consistency of assessment results of PLO (S4)	Update the rubrics used for the assessment of professional outcomes.	Quality Committee and SDP Committee
4.	Improve the attainment level PLO(S1)	Design a Remedial Math Course for EE students	Curriculum Committee
		offer the Remedial Math Course for EE students	Department Chair and Course Instructor
5.	Improve the attainment level PLO(K1) and PLO(S4)	Cooperate with English Language Teaching Institute to Establishing an English Language Support Program for EE students.	Curriculum Committee

		Offer the English Language Support Program for EE students.	Department chair and English program coordinator
6.	Improve the attainment level PLO(V3)	Integrate Future X in the program. Phase 1: select a set of courses designed to empower students with new knowledge	Curriculum Committee
		Integrate Future X in the program. Phase 2: incorporate the selected courses into one of the BSc EE program courses.	Department chair and English program coordinator
7.	Student Evaluation of Program Quality.	Provide industrial visits.	Department Council
8.	Scientific Research and Innovation	Establish research partnerships with research centers.	Scientific Committee
9.	Community Partnership	Establish community partnerships.	University College Department
10.	Other Evaluation	• Review the alignment of the program mission with Saudi Vision 2030. • Publish PLOs and share them with stakeholders.	Quality Committee
11.	Program KPIs	• The program should emphasize the teaching of math and electrical design-based courses, and should include more problem solving sessions. • Acquiring data on the graduates' employability needs to be improved by adding more communications between the	• Department Council • Quality Committee with the help from Alumni

		graduates and the program. The program should offer employability-based training programs to the graduates and conduct an orientation prepare the graduates for the job market. The students shall be encouraged to enroll for higher studies as well.	Affairs at the University
12.	Operational Plan KPIs	• Arrange and coordinate a guest speaker lecture focusing on professional ethics and values. • Develop awareness workshops for students related to the opportunities and importance of community service. • Present the benefits of collaboration and internship opportunities. • Develop an internship program with industry partners.	

- Attach any unachieved improvement plans from previous report.
- The annual program report needs to be discussed in department council

F. Approval of Annual Program Report

COUNCIL / COMMITTEE	DEPARTMENT OF ELECTRICAL ENGINEERING COUNCIL

REFERENCE NO.	3/APR 2022-2023
DATE:	30/10/2023