



# Program Specification (Bachelor)

| Program: Bachelor of Science in Electrical Engineering |
|--|
| Program Code (as per Saudi university ranking): 071301 |
| Qualification Level: Bachelor of Science               |
| Department: Department of Electrical Engineering       |
| College: Faculty of Engineering                        |
| Institution: University of Tabuk                       |
| Program Specification:New $\Box$ updated* $\boxtimes$  |
| Last Review Date: 25-12-2023                           |

\*Attach the previous version of the Program Specification.





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## A. Program Identification and General Information

#### 1. Program's Main Location :

University of Tabuk, Tabuk

2. Branches Offering the Program (if any):

NA

3. Partnerships with other parties (if any) and the nature of each:

4. Professions/jobs for which students are qualified

**215101 : Electrical Engineer** 

215301 : Telecommunications Engineer

215107 : Power Engineer

215105 : Control Engineer

215201 : Electronics Engineer

5. Relevant occupational/ Professional sectors:

| 6. Major Tracks/Pathways (if any): None |   |   |  |  |  |  |
|---|---|---|--|--|--|--|
| Major track/pathway                     | <b>Credit hours</b><br>(For each track) | <b>Professions/jobs</b><br>(For each track) |  |  |  |  |
| 1.                                      |   |   |  |  |  |  |
| 2.                                      |   |   |  |  |  |  |
| 3.                                      |   |   |  |  |  |  |
|   |   |   |  |  |  |  |
| 7. Exit Points/Awarded Degree (if any   | ): None                                 |   |  |  |  |  |
| exit points/awarded deg                 | ree                                     | Credit hours                                |  |  |  |  |
| 1.                                      |   |   |  |  |  |  |
| 8. Total credit hours: (163)            |   |   |  |  |  |  |





#### **B.** Mission, Objectives, and Program Learning Outcomes

#### **1. Program Mission:**

To offer a comprehensive education in Electrical Engineering that equips students with technical and professional skills, instills moral values and ethical behavior, and motivates and prepares them to engage in research and community service.

#### 2. Program Goals:

- 1. Produce competent Electrical Engineers
- 2. Inculcate moral values and professionalism among students
- 3. Engage students in community services
- 4. Empower graduates to contribute towards economic prosperity
- 5. Enhance students' ability to engage in research.

## 3. Program Learning Outcomes\*

#### Knowledge and Understanding

|            | <b>0 0</b>   |
|------------|--|
| <b>K</b> 1 | Demonstrate knowledge and comprehension with both breadth and depth in the underlying theories, principles, and concepts of Fundamentals of Electrical Engineering and basic Science.  |
| K2         | Demonstrate knowledge and comprehension with both breadth and depth in the underlying theories, principles, and concepts of Communication Systems, Electronics, and Digital Systems.   |
| K3         | Demonstrate knowledge and comprehension with both breadth and depth in the underlying theories, principles, and concepts of Energy Engineering, Machines, and Control Systems.   |
| Skills     |  |
| <b>S</b> 1 | Identify, formulate, and solve complex engineering problems by applying principles of electrical engineering, science, and mathematics.  |
| S2         | Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.                    |
| <b>S</b> 3 | Develop and conduct appropriate experimentation relevant to electrical engineering, analyze and interpret data, and use engineering judgement to draw conclusions.   |
| S4         | Communicate effectively with a range of audiences.   |
| S5         | Create, select, adapt and apply appropriate techniques, resources and modern engineering and IT tools to solve complex engineering problems with understanding of the limitations  |
| S6         | Identify and evaluate the issues and constraints of sustainability, economy, environment, politics, health<br>and safety, and society that are relevant to professional solving of complex engineering problems                |
| Value      | s, Autonomy, and Responsibility  |
| V1         | Recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. |
| V2         | Function effectively on a team, whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.   |
| V3         | Acquire and apply new knowledge as needed, using appropriate learning strategies.  |
| * Addata   | ble for each track or exit Deint (if any)  |

\* Add a table for each track or exit Point (if any)





## C. Curriculum

#### **1. Curriculum Structure**

| Program Structure          | Required/<br>Elective | No. of<br>courses | Credit<br>Hours | Percentage |
|----------------------------|-----------------------|-------------------|-----------------|------------|
| Institution Dequirements   | Required              | 10                | 26              | 15.95%     |
| institution Requirements   | Elective              | 5                 | 13              | 7.98%      |
| College Requirements       | Required              | 13                | 37              | 22.70%     |
| Conege Requirements        | Elective              | -                 | -               | -          |
| Drogram Dequirements       | Required              | 29                | 72              | 44.17%     |
| Program Requirements       | Elective              | 3                 | 9               | 5.52%      |
| Capstone Course/Project    |                       | 1                 | 3               | 1.84%      |
| Field Training/ Internship |                       | 1                 | 3               | 1.84%      |
| Residency year             |                       | -                 | -               | -          |
| Others                     |                       | -                 | -               | -          |
| Total                      |                       | 62                | 163             | 100%       |

\* Add a separated table for each track (if any).

#### 2. Program Courses

| Level      | Course<br>Code | Course Title  | Required<br>or<br>Elective | Pre-Requisite<br>Courses | Credit<br>Hours | Type of<br>requirements<br>(Institution,<br>College, or<br>Program) |
|------------|----------------|---|----------------------------|--------------------------|-----------------|---|
|            | ELS1101        | English (1)<br>(1) إنجليزي  | Required                   | -                        | 3               | Institution   |
| Level<br>1 | MATH1101       | Introduction to<br>Mathematics<br>مقدمة في الرياضيات  | Required                   | -                        | 3               | Institution   |
|            | PHYS1101       | Fundamentals of Physics<br>أساسيات الفيزياء   | Required                   | -                        | 3               | College   |
|            | CSC1102        | Problem Solving in<br>Computing<br>حل المشكلات بالحوسبة   | Required                   | -                        | 3               | Institution   |
|            | ISLS1101       | Islamic Culture between<br>Authenticity and<br>Contemporary<br>الثقافة الاسلامية بين الاصالة<br>والمعاصرة | Required                   | -                        | 2               | Institution   |
|            | CID1101        | Communication Skills<br>مهارات الاتصال  | Required                   | -                        | 2               | Institution   |
|            | ELS1102        | English (2)<br>(2) إنجليزي  | Required                   | ELS1101                  | 3               | Institution   |
| Level      | MATH1102       | Differential Calculus<br>حساب التفاضل   | Required                   | MATH1101                 | 3               | Institution   |
| 2          | CHEM1101       | Fundamentals of<br>Chemistry<br>أساسيات الكيمياء  | Required                   | -                        | 3               | College   |





| Level      | Course<br>Code | Course Title  | Required<br>or<br>Elective | Pre-Requisite<br>Courses | Credit<br>Hours | Type of<br>requirements<br>(Institution,<br>College, or<br>Program) |
|------------|----------------|---|----------------------------|--------------------------|-----------------|---|
|            | CSC1103        | Introduction to<br>programming<br>مقدمة في البرمجة  | Required                   | CSC1102                  | 3               | College   |
|            | ARAB1101       | Arabic Language Skills<br>مهارات اللغة العربية  | Required                   | -                        | 2               | Institution   |
|            | EDUF1102       | Critical Thinking Skills<br>and its Modern<br>Applications<br>مهارات التفكير الناقد وتطبيقاته<br>المعاصرة | Required                   | -                        | 3               | Institution   |
|            | MATH1254       | Engineering<br>Mathematics<br>الرياضيات الهندسية  | Required                   | MATH1102                 | 3               | College   |
|            | MATH1205       | Linear Algebra<br>الجبر الخطي   | Required                   | MATH1102                 | 3               | College   |
| Level      | PHYS1251       | General Physics<br>الفيزياء العامة  | Required                   | PHYS1101                 | 4               | College   |
| 3          | LANT1203       | Writing (1)<br>(1) كتابة  | Required                   | ELS1102                  | 3               | College   |
|            | ISLS1201       | الأخلاق والقيم الحضارية في<br>الاسلام   | Required                   | ISLS1101                 | 2               | Institution   |
|            | GEE_L          | General Language<br>Elective<br>اختياري اللغات  | Elective                   | -                        | 3               | Institution   |
|            | ELEN1201       | Electrical Circuits (1)<br>(1) دوائر کھريائية   | Required                   | MATH1205,<br>PHYS1251    | 3               | Program   |
|            | ELEN1202       | Engineering Analysis<br>التحليل الهندسي   | Required                   | MATH1205,<br>MATH1254    | 3               | Program   |
| امريوا     | MATH1204       | Ordinary Differential<br>Equations<br>معادلات تفاضلية عادية   | Required                   | MATH1254                 | 3               | College   |
| 4          | MATH1255       | Multivariable Calculus<br>حساب التفاضل والتكامل<br>متعدد المتغيرات  | Required                   | MATH1254                 | 3               | College   |
|            | LANT1206       | Writing (2)<br>کتابة (2)  | Required                   | LANT1203                 | 3               | College   |
|            | GEE_T          | Technology Elective<br>Course<br>اختياري التقنية  | Elective                   | -                        | 3               | Institution   |
|            | ELEN1301       | Electrical Circuits (2)<br>(2) دوائر کھريائية   | Required                   | ELEN1201,<br>MATH1204    | 3               | Program   |
| Level<br>5 | ELEN1302       | Electronics (1)<br>(1) إلكترونيات   | Required                   | ELEN1201                 | 3               | Program   |
|            | ELEN1303       | Engineering<br>Computations   | Required                   | MATH1255,<br>CSC1103     | 3               | Program   |





| Level | Course<br>Code | Course Title  | Required<br>or<br>Elective | Pre-Requisite<br>Courses  | Credit<br>Hours | Type of<br>requirements<br>(Institution,<br>College, or<br>Program) |
|-------|----------------|---|----------------------------|---------------------------|-----------------|---|
|       |                | الحسابات الهندسية   |                            |                           |                 |   |
|       | ELEN1304       | Electromagnetics (1)<br>المجالات الكهرومغناطيسية<br>(1)                                     | Required                   | MATH1255,<br>PHYS1251     | 3               | Program   |
|       | ELEN1305       | Electrical Circuits Lab<br>معمل الدوائر الكهربائية  | Required                   | ELEN1201,<br>(CO)ELEN1301 | 1               | Program   |
|       | ELEN1306       | Digital Design<br>التصميم الرقمي  | Required                   | ELEN1201,<br>ELEN1202     | 3               | Program   |
|       | GEE_C          | General Humanitarian<br>and Culture Elective<br>اختياري الثقافات<br>والانسانيات             | Elective                   | -                         | 2               | Institution   |
|       | ELEN1307       | Signals and Systems<br>الإشارات والنظم  | Required                   | ELEN1201,<br>ELEN1202     | 3               | Program   |
|       | ELEN1308       | Electronics (2)<br>إلكترونيات (2)   | Required                   | ELEN1302,<br>ELEN1301     | 3               | Program   |
|       | ELEN1309       | Electromagnetics (2)<br>المجالات الكهرومغناطيسية (2)  | Required                   | ELEN1304                  | 3               | Program   |
| Level | ELEN1310       | Electric Data Networks<br>شبكات البيانات الكهربائية   | Required                   | ELEN1202,<br>CSC1103      | 3               | Program   |
| 6     | ELEN1311       | Digital Design Lab<br>معمل التصميم الرقمي   | Required                   | ELEN1306,<br>ELEN1305     | 1               | Program   |
|       | INEN1302       | Engineering Economy<br>اقتصاد هندسي   | Required                   | MATH1205                  | 2               | College   |
|       | ELEN1312       | Electronics Lab<br>معمل إلكترونيات  | Required                   | (CO)ELEN1308,<br>ELEN1305 | 1               | Program   |
|       | GEE_P          | Elective Professional and<br>Personal Development<br>اختياري التطوير المهني<br>والشخصي      | Elective                   | -                         | 2               | institution   |
| Level | ELEN1401       | Probabilistic Methods in<br>Electrical Engineering<br>طرق احتمالية في الهندسة<br>الكهربائية | Required                   | ELEN1307,<br>MATH1255     | 3               | Program   |
| 7     | ELEN1402       | Electrical Machines<br>الآلات الكهريائية  | Required                   | ELEN1301,<br>ELEN1309     | 3               | Program   |
|       | ELEN1403       | Control Systems<br>نظم التحکم   | Required                   | ELEN1307<br>ELEN1303      | 3               | Program   |





| Level      | Course<br>Code  | Course Title  | Required<br>or<br>Elective | Pre-Requisite<br>Courses | Credit<br>Hours | Type of<br>requirements<br>(Institution,<br>College, or<br>Program) |
|------------|-----------------|---|----------------------------|--------------------------|-----------------|---|
|            | ELEN1404        | Instrumentation and<br>Measurements<br>الأجهزة والقياسات  | Required                   | ELEN1306,<br>ELEN1311    | 2               | Program   |
|            | ELEN1405        | Fundamentals of Design<br>in Electrical Engineering<br>أساسيات التصميم في الهندسة<br>الكهربائية | Required                   | ELEN1312,<br>LANT1206    | 3               | Program   |
|            | ELEN1406        | Practical Engineering<br>Essentials<br>الأساسيات الهندسية التطبيقية                             | Required                   | -                        | 1               | College   |
|            | GEE_S           | Elective Natural and<br>Social Sciences<br>اختياري العلوم الطبيعية<br>والاجتماعية               | Elective                   | -                        | 3               | Institution   |
|            | ELEN1407        | Control Lab<br>معمل التحكم  | Required                   | ELEN1305,<br>ELEN1403    | 1               | Program   |
|            | ELEN1408        | Communications<br>Engineering<br>هندسة الاتصالات  | Required                   | ELEN1401,<br>ELEN1310    | 3               | Program   |
|            | ELEN1409        | Electrical Machines Lab<br>معمل الآلات الكهربائية   | Required                   | ELEN1305,<br>ELEN1402    | 1               | Program   |
| Level<br>8 | ELEN1410        | Embedded Systems<br>النظم المضمنة   | Required                   | ELEN1404,<br>CSC1103     | 4               | Program   |
|            | ELEN1411        | Electrical Energy<br>Engineering<br>هندسة الطاقة الكهربائية                                     | Required                   | ELEN1402                 | 3               | Program   |
|            | ELEN1xxx        | Elective (1)<br>(1) اختياري   | Elective                   | -                        | 3               | Program   |
|            | ELEN1498        | Project<br>مشروع  | Required                   | Department<br>Approval   | 3               | Program   |
|            | ELEN1412        | Power Electronics<br>إلكترونيات القوى   | Required                   | ELEN1308                 | 3               | Program   |
|            | ELEN1413        | Communications Lab<br>معمل الاتصالات  | Required                   | ELEN1408,<br>ELEN1305    | 1               | Program   |
| Level      | ELEN1414        | Electrical Energy Lab<br>معمل الطاقة الكهربائية   | Required                   | ELEN1411,<br>ELEN1409    | 1               | Program   |
| 9          | ELEN1415        | Digital Signal Processing<br>معالجة الإشارات الرقمية  | Required                   | ELEN1403                 | 3               | Program   |
|            | ELEN1xxx        | Elective (2)<br>(2) اختياري   | Elective                   | -                        | 3               | Program   |
|            | <b>ELEN1xxx</b> | Elective (3)  | Elective                   | -                        | 3               | Program   |





| Level       | Course<br>Code | Course Title   | Required<br>or<br>Elective | Pre-Requisite<br>Courses | Credit<br>Hours | Type of<br>requirements<br>(Institution,<br>College, or<br>Program) |
|-------------|----------------|--|----------------------------|--------------------------|-----------------|---|
|             |                | (2) اختياري  |                            |                          |                 |   |
|             | INEN1307       | Engineering Project<br>Management<br>إدارة المشاريع الهندسية                               | Required                   | INEN1302                 | 3               | College   |
|             | ELEN1495       | Practical<br>تدریب   | Required                   | Department<br>Approval   | 3               | Program   |
| Level<br>10 | ELEN1416       | Career Competence in<br>Electrical Engineering<br>الكفاءة المهنية في الهندسة<br>الكهربائية | Required                   | Department<br>Approval   | 2               | Program   |

\* Include additional levels (for three semesters option or if needed).

**\*\*** Add a table for the courses of each track (if any)

|           | ELEN1441 | Design of Analog<br>Integrated Circuits<br>تصميم الدوائر المتكاملة<br>التماثلية | Elective | ELEN1308              | 3 | Program |
|-----------|----------|---|----------|-----------------------|---|---------|
|           | ELEN1442 | Design of Digital<br>Integrated Circuits<br>تصميم الدوائر المتكاملة<br>الرقمية  | Elective | ELEN1306,<br>ELEN1308 | 3 | Program |
|           | ELEN1443 | Communications<br>Electronics<br>إلكترونيات الاتصالات                           | Elective | ELEN1308,<br>ELEN1408 | 3 | Program |
| Electives | ELEN1444 | Wireless<br>Communications<br>الاتصالات اللاسلكية                               | Elective | ELEN1408              | 3 | Program |
|           | ELEN1445 | Optical<br>Communications<br>الاتصالات الضوئية                                  | Elective | ELEN1408,<br>ELEN1415 | 3 | Program |
|           | ELEN1446 | Satellite<br>Communications<br>اتصالات الأقمار الصناعية                         | Elective | ELEN1308,<br>ELEN1408 | 3 | Program |
|           | ELEN1447 | Microwave<br>Engineering<br>هندسة الموجات الدقيقة                               | Elective | ELEN1309              | 3 | Program |
|           | ELEN1448 | Power System<br>Analysis  | Elective | ELEN1411,<br>ELEN1303 | 3 | Program |





|          | تحليل نظم القوى  |          |                        |   |         |
|----------|--|----------|------------------------|---|---------|
| ELEN1449 | Power System<br>Operation and<br>Control<br>التشغيل والتحكم في نظم<br>القوى  | Elective | ELEN1411,ELEN1403      | 3 | Program |
| ELEN1450 | Protection of Power<br>Systems<br>حماية نظم القوى  | Elective | ELEN1411               | 3 | Program |
| ELEN1451 | Fundamentals of<br>Energy Efficiency<br>أساسيات كفاءة الطاقة   | Elective | ELEN1411               | 3 | Program |
| ELEN1452 | Renewable Energy<br>and Smart Grids<br>مصادر الطاقة المتجددة<br>والشبكات الذكية  | Elective | ELEN1411               | 3 | Program |
| ELEN1453 | Industrial<br>Automation<br>أتمتة صناعية   | Elective | ELEN1301,<br>ELEN1410  | 3 | Program |
| ELEN1454 | Power Electronics<br>Applications<br>تطبيقات إلكترونيات<br>القوى   | Elective | ELEN1412               | 3 | Program |
| ELEN1455 | Applications of<br>Artificial<br>Intelligence in<br>Control Systems<br>تطبيقات الذكاء<br>الاصطناعي في نظم التحكم       | Elective | ELEN1306,<br>ELEN1403  | 3 | Program |
| ELEN1456 | Special Topics in<br>Electrical Power and<br>Machines<br>مواضيع خاصة في هندسة<br>القوى والآلات                         | Elective | Department<br>Approval | 3 | Program |
| ELEN1457 | Special Topics in<br>Communication and<br>Electronics<br>Engineering<br>مواضح خاصة في هندسة<br>الاتصالات والالكترونيات | Elective | Department<br>Approval | 3 | Program |





#### **3. Course Specifications:**

Insert hyperlink for all course specifications using NCAAA template (T-104)

https://drive.google.com/drive/folders/1zMIJO7q1fVOsMuVT-XW8wEGLr8NLpMga?usp=drive\_link

#### 4. Program learning Outcomes Mapping Matrix:

Align the program learning outcomes with program courses, according to the following desired levels of performance (I = Introduced & P = Practiced & M = Mastered).

|                      |            | Program Learning Outcomes |            |           |           |           |    |    |           |                |                    |                    |
|----------------------|------------|---------------------------|------------|-----------|-----------|-----------|----|----|-----------|----------------|--------------------|--------------------|
| Course<br>code & No. | Kno<br>und | wledge a<br>lerstand      | and<br>ing |           |           | Skil      | ls |    |           | Value<br>and I | es, Auto<br>Respon | onomy,<br>sibility |
|                      | K1         | К2                        | K3         | <b>S1</b> | <b>S2</b> | <b>S3</b> | S4 | S5 | <b>S6</b> | V1             | V2                 | V3                 |
| ARAB1101             |            |                           |            |           |           |           | I  |    |           |                |                    |                    |
| CHEM1101             | I          |                           |            | I         |           |           |    |    |           |                |                    |                    |
| CID1101              |            |                           |            |           |           |           | I  |    |           |                |                    |                    |
| CSC1102              | I          |                           |            | I         |           |           |    | I  |           |                |                    |                    |
| CSC1103              | I          |                           |            | I         | I         |           |    | I  |           |                |                    |                    |
| EDUF1102             |            |                           |            |           |           |           |    |    |           | Ι              | Ι                  |                    |
| ELS1101              |            |                           |            |           |           |           | 1  |    |           |                |                    |                    |
| ELS1102              |            |                           |            |           |           |           | I. |    |           |                |                    |                    |
| GEE_C                |            |                           |            |           |           |           |    |    |           | I              |                    |                    |
| GEE_L                |            |                           |            |           |           |           | I. |    |           |                |                    |                    |
| GEE_P                |            |                           |            |           |           |           |    |    |           | I              | I                  | I                  |
| GEE_S                | I          |                           |            |           |           |           |    |    |           |                |                    |                    |
| GEE_T                | I          |                           |            |           |           |           |    | I  |           |                |                    |                    |
| ELEN1406             | I          |                           |            |           |           |           | I  |    | Ι         | Ι              |                    |                    |
| INEN1302             | I          |                           |            | I         |           |           |    |    | I         |                |                    |                    |
| INEN1307             | Р          |                           |            | Р         |           |           |    |    |           | Р              |                    |                    |
| ISLS1101             |            |                           |            |           |           |           |    |    |           | I              |                    |                    |
| ISLS1201             |            |                           |            |           |           |           |    |    |           | I              |                    |                    |

\*\*\*\*



|            |     |          |     |           | Progra    | m Learni  | ng Outco | omes |           |      |          |          |
|------------|-----|----------|-----|-----------|-----------|-----------|----------|------|-----------|------|----------|----------|
| Course     | Kno | wledge   | and |           |           | chi       |          |      |           | Valu | es, Auto | nomy,    |
| code & No. | unc | lerstand | ing |           |           | SKI       | IS       |      |           | and  | Respon   | sibility |
|            | K1  | K2       | K3  | <b>S1</b> | <b>S2</b> | <b>S3</b> | S4       | S5   | <b>S6</b> | V1   | V2       | V3       |
| LANT1203   |     |          |     |           |           |           | I        |      |           |      |          |          |
| LANT1206   |     |          |     |           |           |           | Р        |      |           |      |          |          |
| MATH1101   | I   |          |     | I.        |           |           |          |      |           |      |          |          |
| MATH1102   | I   |          |     | I.        |           |           |          |      |           |      |          |          |
| MATH1205   | I   |          |     | I.        |           |           |          |      |           |      |          |          |
| MATH1204   | I   |          |     | I         |           |           |          |      |           |      |          |          |
| MATH1255   | Р   |          |     | Р         |           |           |          |      |           |      |          |          |
| MATH1254   | Р   |          |     | Р         |           |           |          |      |           |      |          |          |
| PHYS1101   | I   |          |     | I.        |           |           |          |      |           |      |          |          |
| PHYS1251   | I   |          |     | I         |           |           |          |      |           |      |          |          |
| ELEN1201   | I   |          |     | I.        |           |           |          |      |           | I    |          |          |
| ELEN1202   | Р   |          |     | Р         |           |           |          | Р    |           | Р    |          |          |
| ELEN1301   | Р   |          |     | Р         | I         |           |          |      |           |      | Р        |          |
| ELEN1302   |     | I        |     | Р         | I         |           |          |      |           | Р    |          |          |
| ELEN1303   | Р   |          |     | Р         |           |           |          | Р    |           | Р    |          |          |
| ELEN1304   | Р   |          |     | Р         |           |           |          |      |           | Р    |          |          |
| ELEN1305   | Р   |          |     |           |           | I         |          |      |           |      | Р        |          |
| ELEN1306   |     | I        |     | Р         | Р         |           |          | Р    |           |      | Р        |          |
| ELEN1307   |     | I        |     | Р         |           |           |          |      |           | Р    |          |          |
| ELEN1308   |     | Р        |     | Р         | Р         |           |          |      |           | Р    |          |          |
| ELEN1309   | М   |          |     | Р         | Р         |           |          |      |           | Р    |          |          |
| ELEN1310   |     | Р        |     | Р         |           |           |          |      |           | Р    |          |          |
| ELEN1311   |     | Р        |     |           |           | Р         |          |      |           |      | Р        |          |
| ELEN1312   |     | Р        |     |           |           | Р         |          |      |           |      | Р        |          |
| ELEN1401   |     | Р        |     | Р         |           |           |          |      |           | Р    |          |          |
| ELEN1402   |     |          | I   | М         |           |           |          |      |           | М    |          |          |
| ELEN1403   |     |          | I   | М         | Μ         |           |          | М    |           |      | Μ        |          |
| ELEN1404   |     | Р        |     | М         | Μ         |           |          |      |           |      | Μ        |          |
| ELEN1405   | Μ   |          |     | М         | Μ         |           | Р        |      | Р         | М    | Μ        |          |
| ELEN1406   | Μ   |          |     |           |           | М         |          |      |           |      |          |          |
| ELEN1407   |     |          | Р   |           |           | М         |          |      |           |      | Μ        |          |
| ELEN1408   |     | Р        |     | М         |           |           |          |      |           | М    |          |          |
| ELEN1409   |     |          | Р   |           |           | М         |          |      |           |      | М        |          |
| ELEN1410   |     | Μ        |     |           | Μ         | М         |          | М    | М         |      | М        |          |
| ELEN1411   |     |          | Р   | М         |           |           |          |      |           | М    |          |          |
| ELEN1498   | М   |          |     | М         | М         | М         | М        | М    | М         | М    | М        | М        |
| ELEN1412   |     |          | М   | М         | М         |           |          | М    |           |      | М        |          |
| ••         | ••  |          |     |           |           |           |          |      |           |      |          |          |



|                      | Program Learning Outcomes      |    |    |    |        |           |    |    |           |   |    |    |
|----------------------|--------------------------------|----|----|----|--------|-----------|----|----|-----------|---|----|----|
| Course<br>code & No. | Knowledge and<br>understanding |    |    |    | Skills |           |    |    |           | Values, Autonomy,<br>and Responsibility |    |    |
|                      | K1                             | K2 | К3 | S1 | S2     | <b>S3</b> | S4 | S5 | <b>S6</b> | V1                                      | V2 | V3 |
| ELEN1413             |                                | М  |    |    |        | М         |    |    |           |   | М  |    |
| ELEN1414             |                                |    | Μ  |    |        | Μ         |    |    |           |   | М  |    |
| ELEN1415             |                                | Μ  |    | Μ  | Μ      |           |    | Μ  |           |   | М  |    |
| ELEN1495             | М                              |    |    | М  |        |           | М  |    |           | М                                       | М  |    |
| ELEN1497             | М                              |    |    | Μ  |        |           |    |    |           | М                                       |    | М  |

\* Add a separated table for each track (if any).

#### 5. Teaching and learning strategies applied to achieve program learning outcomes.

Describe teaching and learning strategies, including curricular and extra-curricular activities, to achieve the program learning outcomes in all areas.

To achieve program learning outcomes effectively, a combination of teaching and learning strategies, both curricular and extra-curricular, are employed:

- Lectures and Class Discussions:
- Laboratory Work and Experiments
- Case Studies
- Projects
- Field Trips and Site Visits
- Online Learning Platforms
- Community Service and Outreach
- Co-op Training

#### 6. Assessment Methods for program learning outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure the achievement of program learning outcomes in all areas.

The program should devise a plan for assessing Program Learning Outcomes (all learning outcomes should be assessed at least twice in the bachelor program's cycle and once in other degrees).

1-Knowledge and understanding:
Direct: Exams, Assignments, Quizzes
Indirect: Student Survey
2-Skills:
Direct: Exams, Practical Exams, Assignments, Quizzes
Indirect: Student Survey
3-Values:
Direct: Projects, Mini projects, Reports, Presentations, Interviews
Indirect: Student Survey

#### **D. Student Admission and Support:**

#### **1. Student Admission Requirements**

Faculty of Engineering Admission Requirements:





#### https://www.ut.edu.sa/ar/Deanship/dar/Documents/Form/1443H.pdf

All students are admitted to "General Engineering".

#### The requirements and process for admitting students into the Electrical Engineering program:

1. Pass all preparatory year courses.

2. After completing 45 credit hours, the student must indicate his choice from the four engineering programs offered (Mechanical, Civil, Electrical, and Industrial).

3. Selections are made based on the number of students allowed by the Faculty of Engineering Council in each program that academic year.

4. Approval of the Dean.

#### 2. Guidance and Orientation Programs for New Students

(Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level).

- 1. An orientation session is organized by the college for the new students at the beginning of each year.
- 2. Each student is assigned an academic advisor.

#### **3. Student Counseling Services**

(Academic, professional, psychological and social)

(Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level).

One of the goals of the department of Electrical Engineering is to build a strong lifelong relationship with its students through a consistent system of student support. The support system is designed to enrich and enhance students' academic and non-academic skills, maximize the benefits to the student's campus life, and provide students with the necessary tools and support that will help them with the problems they face in life. To achieve this goal, University of Tabuk and the department of Electrical Engineering adopts various initiatives, including academic advising, counseling, career offices.

Academic advising provides students with the opportunity to build relationships with their advisors to help the students in building their educational plans and careers, learn the skills needed for academic success, and learn how to access a variety of resources and services available to them. Academic advising is a collaborative educational process whereby students and their advisors are partners in meeting the essential learning outcomes, ensuring student academic success, and outlining the steps for achievement of the student's personal, academic, and career goals. This partnership requires both the student and the advisor to have clear responsibilities to ensure the advising partnership is successful. Advising teaches skills like decision-making and critical thinking, as well as content like curriculum and academic regulations. Advising and teaching are both interactive activities that result in student learning. Academic advising at the department of Electrical Engineering covers different aspects that interest students such as curriculum and academic relations, University rules and regulations, the program policies and procedures, career life, and student problems and behavior. To maximize the benefits of the advisor-student partnership and to reach its planned goals, this relationship is built on a strong foundation from the first day of student enrollment in the Electrical Engineering program.

Advisor Responsibilities

• Develop and promote a trustful and respectful environment that allows students to identify, develop and achieve their realistic goals.

- Assist students in acquiring learning, communication, decision-making, and leadership skills.
- Raise student awareness of how one's own academic experiences connect to one's life.
- Motivate students' sense of responsibility for their educational plans and achievements.

• Understand and effectively communicate with students the department policies, management procedures, graduation requirements, and educational requirements.





• Guide students on how to effectively pursue and benefit from the University of Tabuk and the department of Electrical Engineering educational and entertainment resources.

Student Responsibilities

- Schedule and attend an appointment with the academic advisor whenever needed.
- Consider the valuable suggestions and recommendations from faculty and advisors.

• Review transcript and program requirements each semester and keep track of progress toward completing the graduation requirements.

• Give priority to the advising processes and sessions by being organized and prepared to discuss with the advisor worries, goals, educational plans, career life, and non-academic activities. Students are encouraged to bring any supporting materials when attending advisory meetings.

• Practice the highest levels of responsibility when setting and executing educational plans and achievements and commit to and pursue an academic plan directed towards an outstanding completion of the program degree.

• Check their e-mail regularly.

#### 4. Special Support

(Low achievers, disabled, gifted, and talented students).

1. Low achievers are encouraged by faculty members to improve by giving them extra assignments and tutorial sessions.

2. Disabled students are given special attention, and their special needs are fulfilled either at the department level or the university through the special needs unit in the deanship of students' affairs

3. Gifted and talented students are encouraged to improve their knowledge and skills by giving them more challenging academic tasks and projects. Faculty of Engineering with the support of the university established an Innovation program for gifted students to guide and support them.

## E. Faculty and Administrative Staff:

#### 1. Needed Teaching and Administrative Staff

|                     | Speci                     | alty   | Special         | <b>Required</b> Numbers |   |   |  |
|---------------------|---------------------------|--|-----------------|-------------------------|---|---|--|
| Academic Kank       | General                   | Specific   | Skills (if any) | М                       | F | Т |  |
| Professor           | Electrical<br>Engineering | Power<br>Systems,<br>Power<br>Electronic<br>s,<br>Communi<br>cations |                 | 3                       | 0 | 3 |  |
| Associate Professor | Electrical<br>Engineering | Power<br>Systems<br>Electronic<br>s<br>Communi<br>cations            |                 | 8                       | 0 | 8 |  |





| Assistant Professor                     | Electrical<br>Engineering | Power<br>Systems<br>Electronic<br>s<br>Communi<br>cations | 12 | 0 | 12 |
|---|---------------------------|---|----|---|----|
| Lecturer                                | Electrical<br>Engineering | Communi<br>cations  | 1  | 0 | 1  |
| Teaching Assistant                      | Electrical<br>Engineering |   | 0  | 0 | 0  |
| Technicians and<br>Laboratory Assistant | Electrical<br>Engineering |   | 4  | 0 | 4  |
| Administrative and<br>Supportive Staff  |                           |   | 1  | 0 | 0  |
| Others (specify)                        |                           |   |    |   |    |

#### F. Learning Resources, Facilities, and Equipment:

#### **1. Learning Resources**

Learning resources required by the Program (textbooks, references, and e-learning resources and web-based resources, etc.)

Textbooks Blackboard Digital Library

#### 2. Facilities and Equipment

(Library, laboratories, classrooms, etc.)

- Library services, medical facilities, recreational and sporting facilities, and student services are provided at the institutional level.
- A sufficient number of classrooms is available at the college level, and they are shared by all programs.
- 8 specialized laboratories are available for the program. These labs are maintained and upgraded regularly, and new labs are being established.

#### 3. Procedures to ensure a healthy and safe learning environment

(According to the nature of the program)

- Safety guidelines are applied to ensure the facilities, equipment, and tools in the Electrical Engineering program are safe for their intended purposes.
- At the beginning of each semester, a laboratory faculty member reviews the safety guidelines with students during Lab time.
- The faculty hands out safety guideline documentation with each Lab syllabus.
- During the laboratory coursework, the faculty member ensures that safety protocols are followed.



• Safety guidelines are posted in every Lab.

• Any issues noted by students or staff are noted to the head of the department or the faculty administration. The administration then contacts the corresponding maintenance department, health and safety administration or contractor to resolve the issue.

• Fire extinguishers are available at appropriate locations in all buildings.

• An emergency evacuation procedure is affixed in laboratories and in different appropriate places in the faculty buildings.

• Emergency telephone numbers are posted at appropriate locations in all buildings.

#### **G. Program Quality Assurance:**

#### **1. Program Quality Assurance System**

Provide a link to quality assurance manual.

https://drive.google.com/file/d/1B0hhI14y 1nXqwb2oGOd-uW k4 rEE70/view?usp=sharing

#### 2. Procedures to Monitor Quality of Courses Taught by other Departments

• Course binders, including course reports, as outlines by the department, are collected.

• Assessment procedure and direct and indirect methods approved by the department are used in assessing student attainment of course learning outcomes.

• The Academic Accreditation Committee reviews course binders and course reports. Recommendations by the course instructor are reviewed. Recommendations by course instructor as well as any additional proposed actions are discussed.

## 3. Procedures Used to Ensure the Consistency between Main Campus and

#### Branches (including male and female sections).

#### 4. Assessment Plan for Program Learning Outcomes (PLOs),

- 1. Direct assessment of student attainment of PLOs is performed each term.
- 2. Direct assessment results are reviewed at the end of the academic year.
- 3. Results of exit, employers, and alumni surveys are reviewed for comments and recommendations.

4. The Academic Accreditation Committee reviews all assessment results and prepares an action plan. Recommendations from previous year's action plans are incorporated into the proposed action plan, whenever necessary.

- 5. Feedback from the External Advisory Board is sought, whenever possible.
- 6. The proposed action plan is discussed, finalized, and approved by the department council.
- 7. The approved action plan is submitted to the Vice-Deanship of Development and Quality, Faculty of Engineering,
- for approval and facilitating implementation.
- 8. The approved action plan is shared with faculty members and relevant stakeholders.

#### **5. Program Evaluation Matrix**

| Evaluation<br>Areas/Aspects | Evaluation<br>Sources/References | Evaluation Methods  | <b>Evaluation Time</b> |
|-----------------------------|----------------------------------|---------------------|------------------------|
| Program goals               | Alumni, Employers                | Surveys, Interviews | End of academic year   |



NA



| Evaluation<br>Areas/Aspects                      | Evaluation<br>Sources/References | <b>Evaluation Methods</b> | Evaluation Time      |
|--|----------------------------------|---------------------------|----------------------|
| Effectiveness of teaching and assessment methods | Students                         | Surveys                   | End of trimester     |
| Performance of teaching<br>staff                 | Program leaders, Students        | Surveys                   | End of academic year |
| Learning resources                               | Faculty, Students                | Surveys                   | End of academic year |

**Evaluation Areas/Aspects** (e.g., leadership, effectiveness of teaching & assessment, learning resources, services, partnerships, etc.)

**Evaluation Sources** (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others.

**Evaluation Methods** (e.g., Surveys, interviews, visits, etc.)

Evaluation Time (e.g., beginning of semesters, end of the academic year, etc.)





# 6. Program KPIs\*

The period to achieve the target (5) year(s).

| No. | KPIs<br>Code | KPIs   | Targeted Level | Measurement<br>Methods  | Measurement<br>Time          |
|-----|--------------|--|----------------|---|------------------------------|
| 1   | KPI-P-01     | Students' Evaluation<br>of quality of<br>learning experience<br>in the program     | 4.2            | Average of overall<br>rating of final year<br>students for the<br>quality of learning<br>experience in the<br>program on a five-<br>point scale in an<br>annual survey.         | End of each Academic<br>year |
| 2   | KPI-P-02     | Students' evaluation<br>of the quality of the<br>courses                           | 3.4.2          | Average students<br>overall rating for the<br>quality of courses<br>on a five-point scale<br>in an annual survey.   | End of each Academic<br>year |
| 3   | KPI-P-03     | Completion rate  | 65%            | Proportion of<br>undergraduate<br>students who<br>completed the<br>program in<br>minimum time in<br>each cohort.  | End of each Academic<br>year |
| 4   | KPI-P-04     | First-year students<br>retention rate  | 95%            | Percentage of first-<br>year undergraduate<br>students who<br>continue at the<br>program the next<br>year to the total<br>number of first-year<br>students in the same<br>year. | End of each Academic<br>year |
| 5   | KPI-P-05     | Students'<br>performance in the<br>professional and/or<br>national<br>examinations | 60%            | Percentage of<br>students or<br>graduates who were<br>successful in the<br>professional and / or<br>national<br>examinations, or<br>their score average<br>and median (if any). | End of each Academic<br>year |
| 6   | KPI-P-06     | Graduates'<br>employability and<br>enrolment in<br>postgraduate<br>programs        | 50%            | Percentage of<br>graduates from the<br>program who within<br>a year of graduation<br>were employed or<br>enrolled in<br>postgraduate  | End of each Academic<br>year |



| No. | KPIs<br>Code | KPIs   | Targeted Level | Measurement<br><u>Methods</u>  | Measurement<br>Time          |
|-----|--------------|--|----------------|--|------------------------------|
|     |              |  |                | programs during the<br>first year of their<br>graduation to the<br>total number of<br>graduates in the<br>same year.   |                              |
| 7   | KPI-P-07     | Employers'<br>evaluation of the<br>program graduate's<br>proficiency | 4.2            | Average of overall<br>rating of employers<br>for the proficiency<br>of the program<br>graduates on a five-<br>point scale in an<br>annual survey.  | End of each Academic<br>year |
| 8   | KPI-P-08     | Ratio of students to<br>teaching staff                               | 12:1           | Ratio of the total<br>number of students<br>to the total number<br>of full-time and full-<br>time equivalent<br>teaching staff in the<br>program   | End of each Academic<br>year |
| 9   | KPI-P-09     | Percentage of<br>publications of<br>faculty members                  | 85%            | Percentage of full-<br>time faculty<br>members who<br>published at least<br>one research during<br>the year to total<br>faculty members in<br>the program.   | End of each Academic<br>year |
| 10  | KPI-P-10     | Rate of published<br>research per faculty<br>member                  | 3.5            | The average number<br>of refereed and/or<br>published research<br>per each faculty<br>member during the<br>year (total number<br>of refereed and/or<br>published research<br>to the total number<br>of full-time or<br>equivalent faculty<br>members during the<br>year).  | End of each Academic<br>year |
| 11  | KPI-P-11     | Citations rate in<br>refereed journals<br>per faculty member         | 10             | The average number<br>of citations in<br>refereed journals<br>from published<br>research per faculty<br>member in the<br>program (total<br>number of citations<br>in refereed journals<br>from published<br>research for full-<br>time or equivalent<br>faculty members to | End of each Academic<br>year |





| No.        | KPIs<br>Code   | KPIs       | Targeted Level | Measurement<br>Methods         | Measurement<br>Time |
|------------|----------------|------------|----------------|--------------------------------|---------------------|
|            |                |            |                | the total research published). |                     |
| * includin | g KPIs require | d by NCAAA |                |                                |                     |

# H. Specification Approval Data:

| Council / Committee | Department of Electrical Engineering Council |
|---------------------|--|
| Reference No.       | EE_PS/EE Council                             |
| Date                | 25/12/2023                                   |

