

برنامج بكالوريوس الهندسة الكهربائية

Electrical Engineering Bachelor's program



وكالة الجامعة للشؤون الأكاديمية
Vice Presidency of Academic Affairs

نظام الفصلين الدراسي
Two-semester System

1445 - 2024 G هـ

من الشمال... إلى الوطن



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Northern Border University Overview

1. Foundation

Being the only university in the Northern Borders Region, Northern Border University enjoys a unique position in higher education in Saudi Arabia, which is why it holds the name of this precious region. The university plans are inspired by the region's rich values, culture, history, and location. We also ensure that our Strategic Plan 2020-2025 goes along with the region's rich natural resources, Vision 2030, and with the New University System, guided by the strategic priorities of the Northern Borders Region's Emirate.

The Northern Border University (NBU) traces its origin to the 1981 founding of the Intermediate College for Girls, which formed the nucleus of its present iteration. In 1987, the Intermediate College for Girls was renamed the Teachers' College, which also coincided with the awarding of its first Bachelor's degree. Seventeen years later, a College of Science in Arar and a community college in Rahfa were founded as extension campuses of the King Abdulaziz University in Jeddah. The College of Science housed five academic departments that included biology, chemistry, computer science, mathematics and physics while the community college included the departments of administrative sciences, computer science, engineering science, applied medical sciences, and basic sciences.

In 2007 during his historic visit to the Northern Border's Region, the late Custodian of the Two Holy Mosques King Abdullah bin Abdul Aziz declared the founding of the NBU through a royal decree. The nascent university amalgamated the previously established Teachers' College and both extension campuses of the King Abdulaziz University in Arar and Rafha. Soon after NBU's founding, a number of new colleges were founded. These colleges included: medicine, pharmacy, nursing, applied medical sciences, engineering, computer science, business administration, and community colleges dispersed over its main campus in Arar plus three branch campuses in Rafha, Turaif and Al-Owaigeelah. The nascent institution has gone through a period of rapid growth becoming a major transformative hub of knowledge and socioeconomic development in the Region.

[\[NBU-Strategic Plan - P6\]](#)

2. Vision

We aspire to become a distinguished and credible university, recognized for our academic programs based on building competency, research, innovation, and providing services across the region and the Kingdom. [[NBU-WEBSITE](#)]

3. Mission

We are a regionally serving, comprehensive university committed to educational excellence. Guided by our core values, heritage, and place, We deliver innovative educational programs characterized by outcomes that leverage the human, economic, cultural, and natural resources for the Northern Borders Region and beyond.

[[NBU-WEBSITE](#)]

4. Objectives

Table 1. NBU Objectives

U01	Providing excellent education that sharpens intellect and professionalism.
U02	Stimulating research and innovation following the university's research priorities.
U03	Developing community partnership.
U04	Developing an administrative and financial system that enhances management efficiency and diversifies sources of income.

[[NBU-WEBSITE](#)]

5. Graduate attributes



Figure 1. NBU- Graduate Attributes

6. Values

- Integrity.
- Community Engagement and Civic Responsibility.
- Accountability.
- Collaboration.

[\[NBU-Strategic Plan - P6\]](#)

College Overview

1. Foundation

The College of Engineering in Arar was established after the founding of the Northern Border University under the Higher Education Council Resolution No. 20/46/1428 dated 06/2/1428 AH. The College of Engineering is committed at Northern Border University to provide high quality engineering programs, distinguished scientific research, and contribute to the community service to meet the needs of development and supporting mining fields in the northern border region and throughout the kingdom. The College of Engineering at Northern Border University offers five-degree programs. These programs include: Civil, Chemical, Electrical, Industrial, and Mechanical engineering, all of which are fully accredited by the Engineering Accreditation Commission of ABET. Our distinguished faculty prepares qualified capable of supporting the industry and contributing to the technological revolution that the Kingdom of Saudi Arabia is witnessing today. College of Engineering provides graduates with the theory and practical application necessary to meet tomorrow's challenges and contribute to achieve the objectives of Kingdom vision 2030. To achieve its goals that are in line with the Strategic Goals of the Northern Border University, the College of Engineering always strives to provide an environment that promotes continuous improvement, quality, innovation, creativity and curriculum development. There are many opportunities for engineers in the Kingdom. Currently, our graduates are employed in various industries in the region, such as petroleum, chemical, mines, automotive, electronic, energy, and manufacturing. Others are employed either by private companies or occupy positions in Government Ministries and other national Agencies, including Defense and Aviation. Starting from the year 2022, the three-semester study system (trimester) will be adopted in all programs offered by the College of Engineering. Each semester consists of twelve weeks. The periods of registration, deletion, addition, and final exams are not included.

2. Vision

Excellence in engineering education, scientific research, and community service.

3. Mission

To provide high quality engineering programs, distinguished scientific research and contribute to community service to meet the needs of development and supporting mining fields in the northern border region and throughout the kingdom.

4. Objectives

- Providing distinguished academic programs that meet the requirements of development and mining.
- Preparing distinguished engineering cadres to compete in the labor market.
- Attracting and retaining distinguished faculty and researchers.
- Promoting scientific research and innovation.
- Developing Community partnership.
- Continuous development of services, equipment, and facilities.

5. Scientific Departments

The College of Engineering at Northern Border University offers five-degree programs. These programs include: Civil, Chemical, Electrical, Industrial, and Mechanical engineering, all of which are fully accredited by the Engineering Accreditation Commission of ABET.

Department Overview

1. Foundation

The Electrical Engineering Department (EED) was established in 2007. It offers a Bachelor of Science (B.Sc.) degree in Electrical Engineering. The Electrical Engineering Program produced its first graduates in the spring of 2013. In 2018, the program was approved by the Accreditation Board for Engineering and Technology (ABET).

2. Vision

The Vision of Electrical Engineering Department (EED) is:

Excellence in electrical engineering fields.

3. Mission

The Mission of Electrical Engineering Department (EED) is:

To provide high-quality education in electrical engineering fields, produce distinguished scientific research, and serve the society.

4. Objectives

The Objectives of Electrical Engineering Department (EED) are:

- Providing electrical engineering programs that meet the development needs and national and international standards.
- Preparing distinguished electrical engineers to fulfil labor market needs and professional requirements.
- Encouraging scientific research activities in electrical engineering fields.
- Strengthen communication and cooperation with the community.

5. Academic Programs and Degrees Awarded

The Electrical Engineering Department (EED) offers only a Bachelor of Science (B.Sc.) degree in Electrical Engineering.

Table 2. Academic Programs and Degrees Awarded

Code	Program Name	Degree Awarded
1402	Electrical Engineering Program	Bachelor of Science in Electrical Engineering

Program Overview

1. Versions

The Electrical Engineering Program (EEP) with a track in Power was initiated within the Electrical Engineering Department since the first establishment of Northern Border University (NBU) in 2007. Initially, the Departments were overseen by the College of Engineering of King Abdul-Aziz University in Jeddah. At the end of fall 2009, the program admitted the first group of students. These were 14 students who had successfully completed a mandatory one-year Preparatory program. The program started with two Professors, one Associate Professor and two Instructors hired from different nations (Egypt, Tunisia, and Pakistan). At the beginning of fall 2016, there were 80 students enrolled in the different study levels; 53 of them were working on the old plan and 27 registered on the new plan. The first group, comprising 14 students, who were initially enrolled in this Program, was graduated in spring 2013. Graduates received the Bachelor of Science degree in Electrical Engineering (BSEE). The program was accredited by ABET Accreditation Board for Engineering and Technology in 2018.

2. Mission

The Mission of the Electrical Engineering Program (EEP) is:

To prepare electrical engineering graduates that compete in the labor market, sustain self-learning and professional development, and contribute to scientific research and community service.

3. Objectives

The program aims to:

P01: Serve competently in the professional career and academia by demonstrating high-quality knowledge and skills in the Electrical Engineering field.

P02: Display self-learning, research, and critical thinking capability and take initiative in advancing their education and professional standing.

P03: Function as a team member with the capability for leadership and effective communication.

P04: Exhibit commitment to social responsibilities, ethical values, and meaningful community contributions

4. Curriculum Structure

4.1. Electrical Engineering Program

Table 3. Electrical Engineering Program Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	3	6	%4.4
	Elective	2	4	%3.0
College Requirements	Required	14	39	%28.9
	Elective	0	0	%0.0
Program Requirements	Required	27	74	%54.8
	Elective	2	6	%4.4
Capstone Course/Project	Required	2	4	%3.0
Field Training/ Internship	Required	1	2	%1.5
Residency year		0	0	%0.0
Others (Free Courses)		0	0	%0.0
Total		51	135	%100.0

5. Study Plan

5.1. Academic Year-1

5.1.1. Level-1

Table 4. Study Plan - Level 1

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name in Arabic
					Theory	Lab	Other		
1104111	Eng. Math I	R	-	4	3	2		College	رياضيات هندسية 1
1101101	General Physics I	R	-	4	3	2		College	فيزياء عامة 1
1405101	Introduction to Engineering Design	R	-	2	1	2		College	مقدمه في التصميم الهندسي
1403101	Engineering Drawing	R	-	3	1	4		College	رسم هندسي
1606114	Reading I	R	-	2	2	0		College	قراءة 1
1601101	Islamic culture 1	R	-	2	2	0		Institution	الثقافة الإسلامية 1
Total				17	12	10	0		الإجمالي

R/E: Required/ Elective. Type of requirements: Institution/ College/ Program. Other: can be Tutorial/Clinical

5.1.2. Level-2

Table 5. Study Plan - Level 2

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name In Arabic
					Theory	Lab	Other		
1104212	Eng. Math II	R	1104111	4	3	2		College	رياضيات هندسية 2
1404101	Chemistry for Engineers	R	-	3	2	2		Program	كيمياء عامة للمهندسين
1405204	Probability and Statistics for Engineers	R	1104212	3	2	2		College	الاحتمالات والاحصاء
1403111	Basic Workshop	R	1403101	2	1	2		College	الورش الأساسية
1402102	Basic Electrical Circuits	R	1101101	3	2	2		Program	أساسيات الدوائر الكهربائية
1402120	Structured computer programming	R	-	2	1	2		Program	برمجة الحاسب المهيكل
Total				17	11	12	0		الإجمالي

5.2. Academic Year-2

5.2.1. Level-3

Table 6. Study Plan - Level 3

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name In Arabic
					Theory	Lab	Other		
1104313	Eng. Math III	R	1104212	4	3	2		College	رياضيات هندسية 3
1402208	Physics of Electricity and Magnetism	R	1101101, 1104212	3	2	2		Program	فيزياء الكهرباء والمغناطيسية
1405202	Engineering Economy	R	1104111	2	1	2		College	اقتصاد هندسي
1402210	Electronics I	R	1402102	3	2	2		Program	الالكترونيات 1
1402204	Digital Design I	R	1402102	3	2	2		Program	التصميم الرقمي 1
1606110	Writing I	R	-	2	2	0		College	كتابة 1
Total				17	12	10			الإجمالي

5.2.2. Level-4

Table 7. Study Plan - Level 4

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name In Arabic
					Theory	Lab	Other		
1104314	Eng. Math IV	R	1104212	3	2	2		College	رياضيات هندسية 4
1402221	Object-Oriented Computer Programming	R	-	3	2	2		Program	برمجة الحاسب الموجهة كينونيا
1402201	Analytical Methods in Engineering	R	1104212	3	2	2		Program	الطرائق التحليلية في الهندسة
1402203	Electrical Circuits and Systems	R	1402102, 1104313, 1402120	3	2	2		Program	الدوائر والنظم الكهربائية
1402205	Electromagnetic Fields	R	1402208-1104314(co)-1402102	3	2	2		Program	المجالات الكهرومغناطيسية
1602101	Arabic Language	R	-	2	2	0		Institution	اللغة العربية
Total				17	12	10			الإجمالي

5.3. Academic Year-3

5.3.1. Level-5

Table 8. Study Plan - Level 5

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name in Arabic
					Theory	Lab	Other		
1505101	Principles of Law	R	-	3	2	2		College	مبادئ القانون
1402306	Electrical Measurements and Instrumentation	R	1402210	3	2	2		Program	قياسات كهربية وأجهزة قياس
1402360	Electromechanical Energy Conversion I	R	1402205	3	2	2		Program	تحويل كهروميكانيكي للطاقة 1
1402350	Electrical Power Systems I	R	1402-205, 1402-120	3	2	2		Program	نظم القوى الكهربائية 1
1402300	Numerical Methods in Engineering	R	1104313	3	2	2		College	الطرق الحسابية في الهندسة
1601201	Islamic culture 2	R	1601101	2	2	0		Institution	الثقافة الإسلامية 2
Total				17	12	10			الإجمالي

5.3.2. Level-6

Table 9. Study Plan - Level 6

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name in Arabic
					Theory	Lab	Other		
1402340	Principles of Automatic Control	R	1402201, 1402203	3	2	2		Program	مبادئ التحكم الألي
1402361	Electromechanical Energy Conversion II	R	1402205	3	2	2		Program	تحويل كهروميكانيكي للطاقة 2
1402362	Machines lab	R	1402360, 1402361 (co)	1	0	2		Program	معمل آلات كهربية
1402322	Microprocessors and microcontrollers	R	1402204, 1402221	3	2	2		Program	المعالجات والمتحكمات الدقيقة
1403465	Power Plants for Non ME Students	R	1104212, 1101101	3	2	2		Program	محطات القدرة لغير ميكانيكا
1405405	Engineering Ethics	R	-	1	1	0		College	أخلاقيات الهندسة
1606111	Writing II	R	-	2	2	0		College	الكتابة 2
Total				17	11	10			الإجمالي

5.3.3. Summer Term

Table 10. Study Plan - Field Training

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name in Arabic
					Theory	Lab	Other		
1402390	Field training	R	(90 Cr) & dept. appr.	2	-	-		Program	التدريب الصيفي
Total				2					الإجمالي

5.4. Academic Year-4

5.4.1. Level-7

Table 11. Study Plan - Level 7

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name in Arabic
					Theory	Lab	Other		
1402454	Power systems lab	R	1402350	1	0	2		Program	معمل نظم قوى كهربية
1405203	Engineering Management	R	-	2	1	2		College	ادارة هندسية
14024xx	Elective I	E	-	3	2	2		Program	اختياري 1
1402411	Power Electronic I	R	1402210	3	2	2		Program	الالكترونيات القوي 1
1402451	Electrical Power Systems II	R	1402350, 1402361	3	2	2		Program	نظم القوى الكهربائية 2
1402498	B.SC. Project 1	R	(96 Cr) & dept. appr.	2	1	2		Program	مشروع البكالوريوس 1
1601xxx	Elective (1) Islamic culture	E	1601201	2	2	0		Institution	اختياري (1) ثقافة اسلامية
Total				16	10	12			الإجمالي

5.4.2. Level-8

Table 12. Study Plan - Level 8

Course Code	Course Title	R/E	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Type of Requirements	Course Name in Arabic
					Theory	Lab	Other		
1402452	Power Transmission and Distribution	R	1402451	3	2	2		Program	نقل وتوزيع الطاقة الكهربائية
1402453	Switchgear and Protection of Power System I	R	1402451	3	2	2		Program	نظم الوقاية ومعدات القطع 1
1402430	Introduction to Communications	R	1402203	3	2	2		Program	مقدمه في هندسة الاتصالات
14024xx	Elective II	E	-	3	2	2		Program	اختياري 2
1402499	B.SC. Project 2	R	1402498	2	1	2		Program	مشروع البكالوريوس 2
1601xxx	Elective (2) Islamic culture	E	1601201	2	2	0		Institution	اختياري (2) ثقافة اسلامية
Total				16	11	10			الإجمالي

5.5. Elective Courses

5.5.1. University Elective Courses

Table 13. University Elective Courses*

Course Code	Course Title	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Course Name in Arabic
				Theory	Lab	Other	
1601301	Islamic Culture 3	-	2	2	0		ثقافة اسلامية (3)
1601302	Islamic Culture 4	-	2	2	0		ثقافة اسلامية (4)
1601401	Islamic Culture 5	-	2	2	0		ثقافة اسلامية (5)
1601402	Islamic Culture 6	-	2	2	0		ثقافة اسلامية (6)
1601303	Islamic Culture 7	-	2	2	0		ثقافة اسلامية (7)
1601403	Islamic Culture 8	-	2	2	0		ثقافة اسلامية (8)

*The student chooses two courses out of 5 courses.

5.5.2. Program Elective Courses

Table 14. Program Elective Courses

Course Code	Course Title	Pre-Requisite Courses Code	Credit Unit	Contact Unit			Course Name in Arabic
				Theory	Lab	Tutorial	
1402455	Power Systems Instrumentation and Measurements	1402306	3	2	2		أجهزة وقياسات نظم القوى الكهربائية
1402441	Advanced Control Systems	1402340	3	2	2		نظم التحكم المتقدمة
1402456	Power System Transients	1402360, 1402350	3	2	2		الحالات العابرة في نظم القدرة
1402463	Electromechanical Energy Conversion III	1402361	3	2	2		التحويل الكهروميكانيكي للطاقة (3)
1402412	Power Electronics II	1402411	3	2	2		إلكترونيات القوى (2)
1402457	High Voltage Techniques	1402350	3	2	2		تقنيات الجهد العالي
1402458	Economic Operation of Power Systems	1402451, 1405214	3	2	2		التشغيل الاقتصادي لنظم القوى الكهربائية
1402464	Special Electrical Machines	1402361	3	2	2		الآلات الكهربائية الخاصة
1402465	Electrical Drive Systems	1402360, 1402361, 1402411	3	2	2		نظم التحريك الكهربائي
1402442	Programmable Logic Controller and its Applications	1402322	3	2	2		الحاكم المنطقي المبرمج وتطبيقاته
1402459	Energy Efficiency	1402350	3	2	2		كفاءة الطاقة

6. Degree(s) Awarded.

After the completion of 135 credits approved in the program of Electrical Engineering, the awarded Degree is Bachelor of Science in Electrical Engineering (BSc. EE) (بكالوريوس العلوم)

(في الهندسة الكهربائية).

جامعة الحدود الشمالية
NORTHERN BORDER UNIVERSITY



Electrical Engineering Program Specification

NCAAA 2023 Template



من الشمال...إلى الوطن





2023

TP-151



Program Specification

— (Bachelor)

Program: **Electrical Engineering**

Program Code (as per Saudi university ranking): **071301**

Qualification Level: **Level 6/Bachelor of Science**

Department: **Electrical Engineering**

College: **Engineering**

Institution: **Northern Border University**

Program Specification: **New** **updated***

Last Review Date: **11/02/2024**

*Attach the previous version of the Program Specification.



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A. Program Identification and General Information

1. Program's Main Location :

College of Engineering
Main Campus of Northern Border University
Arar City - Northern Border Region.

2. Branches Offering the Program (if any):

None.

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

None.

4. Professions/jobs for which students are qualified

Electrical Engineers are prepared to work in industrial companies, power generation stations, transmission lines and substations for the high and medium voltages, centers of control loads, industrial complexes which are heavily dependent on the use of electric power, distribution and consumption of electrical energy in residential areas and factories, management of energy resources, and programs to conserve energy.

According to National Qualification Framework, the professional occupations can be:

- Electrical Engineer,
- Electromechanical engineer,
- Automation engineer,
- Power generation engineer,
- Power transmission and distribution engineer,
- Electrical wiring engineer,
- Instrumentation Electronic Engineer,
- Engineer in Medical Devices.

5. Relevant occupational/ Professional sectors:

- The consulting and engineering offices.
- The constructions and contracting companies
- The general institution for water refined
- The military occupations management
- The water and sewage authority
- The Saudi commission for the engineers
- The general institution for ports
- The Saudi company for basic industries (SABIC)
- The construction materials factories
- The Saudi airlines
- The Saudi Arabia Aramco company
- The unified Saudi company for Electricity (SCECO)
- Ministry of Water and Electricity
- Ministry of Municipal and Rural Affairs
- The General Establishment for Water Desalination
- General Organization for Ports
- Saudi Airlines
- Construction and contracting companies
- Electronics and communications companies
- Power and electric power companies



- Ministry of Transportation
- General Electricity Corporation
- Saudi Consolidated Electricity Company
- Research & Development

6. Major Tracks/Pathways (if any):

Major track/pathway	Credit hours (For each track)	Professions/jobs (For each track)
1. NA		

7. Exit Points/Awarded Degree (if any):

exit points/awarded degree	Credit hours
1. NA	

8. Total credit hours: (135 Credit Hours)



B. Mission, Objectives, and Program Learning Outcomes

1. Program Mission:

The Mission of the Electrical Engineering Program (EEP) is:

To prepare electrical engineering graduates that compete in the labor market, sustain self-learning and professional development, and contribute to scientific research and community service.

2. Program Objectives:

The program aims to:

PO1: Serve competently in the professional career and academia by demonstrating high-quality knowledge and skills in the Electrical Engineering field.

PO2: Display self-learning, research, and critical thinking capability and take initiative in advancing their education and professional standing.

PO3: Function as a team member with the capability for leadership and effective communication.

PO4: Exhibit commitment to social responsibilities, ethical values, and meaningful community contributions.

3. Program Learning Outcomes*

Knowledge and Understanding

K1 Demonstrate a coherent and broad body of knowledge in basic sciences, mathematics and concepts in the electrical engineering discipline

Skills

S1 Identify, formulate, and solve complex engineering problems by applying principles of 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

S3 Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

S4 Communicate effectively with a range of audiences

Values, Autonomy, and Responsibility

V1 Recognize ethical and professional responsibilities in engineering situations and make informed judgments, 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

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





C. Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	3	6	4.4%
	Elective	2	4	3.0%
College Requirements	Required	14	39	28.9%
	Elective	0	0	0.0%
Program Requirements	Required	27	74	54.8%
	Elective	2	6	4.4%
Capstone Course/Project	Required	2	4	3.0%
Field Training/ Internship	Required	1	2	1.5%
Total		51	135	100%

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

2. Program Courses

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or
Level 1	1104111	Eng. Math I	Required	-	4	College
	1101101	General Physics I	Required	-	4	College
	1405101	Introduction to Engineering Design	Required	-	2	College
	1403101	Engineering Drawing	Required	-	3	College
	1606114	Reading I	Required	-	2	College
	1601101	Islamic culture 1	Required	-	2	Institution
Level 2	1104212	Eng. Math II	Required	1104111	4	College
	1404101	Chemistry for Engineers	Required	-	3	Program
	1405204	Probability and Statistics for Engineers	Required	1104212	3	College
	1403111	Basic Workshop	Required	1403101	2	College
	1402102	Basic Electrical Circuits	Required	1101101	3	Program
	1402120	Structured computer programming	Required	-	2	Program
Level 3	1104313	Eng. Math III	Required	1104212	4	College
	1402208	Physics of Electricity and Magnetism	Required	1101101, 1104212	3	Program
	1405202	Engineering Economy	Required	1104111	2	College
	1402210	Electronics I	Required	1402102	3	Program
	1402204	Digital Design I	Required	1402102	3	Program
	1606110	Writing I	Required	-	2	College





Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or
Level 4	1104314	Eng. Math IV	Required	1104212	3	College
	1402221	Object-Oriented Computer Programming	Required	-	3	Program
	1402201	Analytical Methods in Engineering	Required	1104212	3	Program
	1402203	Electrical Circuits and Systems	Required	1402102, 1104313, 1402120	3	Program
	1402205	Electromagnetic Fields	Required	1402208-1104314(co)-1402102	3	Program
	1602101	Arabic Language	Required	-	2	Institution
Level 5	1505101	Principles of Law	Required	-	3	College
	1402306	Electrical Measurements and Instrumentation	Required	1402210	3	Program
	1402360	Electromechanical Energy Conversion I	Required	1402205	3	Program
	1402350	Electrical Power Systems I	Required	1402-205, 1402-120	3	Program
	1402300	Numerical Methods in Engineering	Required	1104313	3	College
	1601201	Islamic culture 2	Required	1601101	2	Institution
Level 6	1402340	Principles of Automatic Control	Required	1402201, 1402203	3	Program
	1402361	Electromechanical Energy Conversion II	Required	1402205	3	Program
	1402362	Machines lab	Required	1402360, 1402361 (co)	1	Program
	1402322	Microprocessors and microcontrollers	Required	1402204, 1402221	3	Program
	1403465	Power Plants for Non ME Students	Required	1104212, 1101101	3	Program
	1405405	Engineering Ethics	Required	-	1	College
Summer	1606111	Writing II	Required	-	2	College
	1402390	Field training	required	(90 Cr) & dept. appr.	2	Program
Level 7	1402454	Power systems lab	Required	1402350	1	Program
	1405203	Engineering Management	Required	-	2	College
	14024xx	Elective I	Elective	-	3	Program
	1402411	Power Electronic I	Required	1402210	3	Program
	1402451	Electrical Power Systems II	Required	1402350, 1402361	3	Program
	1402498	B.SC. Project 1	Required	(96 Cr) & dept. appr.	2	Program



Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or
	1601xxx	Elective (1) Islamic culture	Elective	1601201	2	Institution
Level 8	1402452	Power Transmission and Distribution	Required	1402451	3	Program
	1402453	Switchgear and Protection of Power System I	Required	1402451	3	Program
	1402430	Introduction to Communications	Required	1402203	3	Program
	14024xx	Elective II	Elective		3	Program
	1402499	B.SC. Project 2	Required	1402498	2	Program
	1601xxx	Elective (2) Islamic culture	Elective	1601201	2	Institution

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

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

3. Course Specifications:

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

[All Course Specifications Link](#)

[Field Training Specification 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).

Course code & No.	Program Learning Outcomes							
	Knowledge and understanding	Skills				Values, Autonomy, and Responsibility		
	K1	S1	S2	S3	S4	V1	V2	V3
1402101	I	I						
1402102	I	I		I				
1402120	I	I	I					
1402201	I	I						
1402203	I	I	I				I	
1402204	I		I	I		I		
1402205	I	I			I			
1402208	I	I						
1402210	I	I	I	I				
1402221	I		I		I			
1402300	I	I					I	
1402306	P	P		P		I		
1402322	P	P		P				I



Course code & No.	Program Learning Outcomes							
	Knowledge and understanding	Skills				Values, Autonomy, and Responsibility		
	K1	S1	S2	S3	S4	V1	V2	V3
1402340	P	P	P	P			P	I
1402350	P	P	P					P
1402360	P	P			P			P
1402361	P	P				P		P
1402362	P			P	P		P	
1402390					M	P	M	M
1402411	M	M	M	M			M	
1402430	M	M			M	M		
1402451	M	M	M					
1402452	M	M	M		M	M		M
1402453	M	M	M	M			M	M
1402454	M			M	M			
1402498		M	M	M	M	M	M	M
1402499		M	M	M	M	M	M	M

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

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

The faculty member for each course selects the teaching and learning strategies that fit the teaching tasks and objectives, and the positive role he expects for learners to achieve the required outcomes. Among the criteria of selecting teaching and learning strategies is the suitability of the strategy with the learning outcomes. This means that the learner's access to what he is expected to know and apply at the end of the lecture. This strategy should consider the available learning and technology resources. Teaching methods are usually used by the faculty member, where he determines the mechanism of creating the appropriate environment for learning and determines the nature of the activity that includes the role of the faculty member and the role of the learner during the lesson. In this context, to achieve the program learning outcomes, the electrical engineering program suggests teaching and learning strategies depending on the cognitive domains in the following table.

Teaching & Learning Strategies employed for each domain

Knowledge and Understanding

Class / Group discussion, Problem-based learning, Scientific research, Collaborative learning, Self-learning, Brainstorming, Peer learning, Observation.

Skills:

Problem-based learning, Scientific research, Lab-based learning, Role-play, Collaborative learning, Self-learning, Peer learning, , Observation.

Values, Autonomy and Responsibility:

Class / Group discussion, Problem-based learning, Scientific research, Role-play, Collaborative learning, Self-learning, Peer learning.





6. Assessment Methods for program learning outcomes.

The process of assessment is the means by which the value of the inputs and outputs of an educational system can be assessed, judged on their novelty and effectiveness, and a diagnosis of their strengths, weaknesses, and shortcomings.

Assessment approaches can be categorized in several ways, but they are typically divided into direct and indirect assessments.

Through direct assessment, the student is assessed on how effectively he demonstrates the necessary knowledge, skills, or abilities in a direct and rapid manner, whether in writing, orally, or in practice.

Indirect Assessment involves evaluating what the students can do without considering samples of their work or directly observing their performance. Depending on the cognitive domains, the electrical engineering program suggests some methods of assessment in the following table.

Assessment Methods (Direct and Indirect) employed for each domain
Knowledge and Understanding
The direct assessment are: Open book exam, Rubric, Discussion, Peer evaluation, Presentations, Reports, Oral exams, Written Tests.
The indirect assessment tools are: Survey for graduates, Survey for faculty members, Survey for alumni.
Skills:
The direct assessment tools are: Open book exam, Rubric, Discussion, Self-assessment, Presentations, Reports, Projects, Oral exams, Problem-based Assessment, Written Tests.
The indirect assessment tools are: Survey for graduates, Survey for faculty members, Survey for alumni, Survey for the capstone design course.
Values, Autonomy and Responsibility:
The direct assessment tools are: Rubric, Case Study, Discussion, Peer evaluation, Presentations, Reports, Field Training Assessment, Projects, Problem-based Assessment, Oral exam.
The indirect assessment tools are: Survey for graduates, Survey for faculty members, Survey for alumni, Survey for the capstone design course.

D. Student Admission and Support:

1. Student Admission Requirements

General Admission Requirements (NBU):

- Be a Saudi national or born of a Saudi mother (Exception can be subjected to special rules).
- Hold a General Secondary Education Certificate or equivalent within five years.
- Obtain a certificate of good conduct and pass required exams/interviews.
- Be medically fit and
- Obtain the approval of his employer if he is an employee.



- Meet any additional University Council requirements at the time of application.

Admission to the College of Engineering (COE):

- Competitive selection based on secondary school grades and weighted scores from national exams.
- Complete at least 25 credit hours with a minimum GPA of 3.0 out of 5.0 in the first year.
- Pass English courses with at least a C grade.
- Unsuccessful candidates may be transferred to other colleges based on their choices and university rules.

Admission to the Electrical Engineering Program (EEP):

- Complete at least one year (two semesters) before specialization.
- Submit specialization request forms listing preferred programs.
- Program allocation based on GPA, preferences, and program capacity.

Additional Information:

- The College of Engineering uses a 5.0 GPA scale with grades ranging from A+ (exceptional) to F (fail).
- Academic Advisors continuously monitor student progress and ensure they meet program requirements.
- The computerized registration system automatically checks prerequisites, but consultation with advisors is recommended.
- Workload limits are set based on GPA and academic level.
- Students can discuss any deviation from the standard study plan with their advisor.

Admission to the EEP is a multi-step process with specific requirements and considerations. This information aims to guide students through the process and help them make informed decisions about their future studies. The students should consult their academic advisors for personalized advice and support.

2. Guidance and Orientation Programs for New Students

Northern Border University (NBU) and the College of Engineering (COE) are committed to providing a smooth and informative transition for new students. Here's a summary of the guidance and orientation programs offered at different levels:

University Level:

- **Induction Week:** An annual event organized by the Deanship of Admissions and Registrar introduces the university's admission process, registration procedures, and key dates.
- **Foundation Year:** This mandatory year equips new students with the necessary skills and knowledge for successful university studies.



College of Engineering Level:

- **Induction Meeting:** Hosted by program heads of departments, this session details admission requirements, program features, career opportunities, and available facilities.
- **Academic Advisor Assignment:** Upon admission, each student is assigned an advisor who guides them through registration and the specialization process.

Electrical Engineering Department Level:

- **Program Overview Session:** This session provides in-depth information about the Electrical Engineering program, its faculty, career prospects, and program requirements.
- **Program Advisor Assignment:** After selecting their specialization, students receive a dedicated program advisor for ongoing academic and career support and guidance.

NBU and the COE recognize the importance of a seamless transition for new students. These multi-level programs ensure students have the knowledge and support needed to navigate their academic journey successfully.

3. Student Counseling Services

The College of Engineering (COE) at NBU recognizes the importance of individual support for student success. That's why we offer comprehensive student counseling services through dedicated faculty advisors.

Academic Guidance:

- **Assigned Advisor:** Each student is paired with a faculty member approved by the EE Department Council to serve as his academic advisor.
- **Personalized Support:** The advisors provide regular guidance and assistance on various academic matters, including:
 - Course selection and scheduling
 - Adding/dropping courses
 - Resolving course conflicts
 - Transferring credits
 - Withdrawing from courses
- **Graduation Support:** the advisors help the students stay on track and graduate on time by monitoring their academic progress and ensuring they meet all program requirements.

Career Guidance:

- **Career Exploration:** the advisors help the students explore career opportunities in the Electrical Engineering field based on their interests and aspirations.
- **Job Placement Support:** the advisors provide guidance and resources to help students secure their dream job, whether in Saudi Arabia or abroad.
- **Graduate Studies Support:** If the students are interested in pursuing higher studies, the advisors can offer guidance on relevant programs and application processes.



The COE's student counseling services are designed to empower you with the knowledge and support you need to succeed academically and professionally. Your dedicated advisor is here to guide you through every step of your journey, from course selection to career planning.

4. Special Support

Advising and Support for All Students:

The College recognizes the diverse needs of all learners and offers various support systems:

- **Academic Advisors:** Monitors the performance of all students, not just low achievers, and provides personalized counseling and guidance on academic progress and challenges.
- **Gifted and Talented Support:** Encourages and challenges high-performing students, offering resources to meet their needs and interests. Additionally, they are given opportunities to mentor their peers.

NBU and the College of Engineering strive to create a supportive and inclusive learning environment where all students, can thrive and achieve their academic goals.

E. Faculty and Administrative Staff:

1. Needed Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professor	Electrical Engineering	-Electrical machines Control	-	1	0	1
Associate Professor	-Electrical Engineering - Engineering Mathematics	- Power electronics - Engineering Mathematics -Power systems -Electrical system control -Communication -Electronics and computer sciences	-	8	0	8





Assistant Professor	Electrical Engineering	-Electric machines -Telecom -Electrical power engineering of electrical systems -Computer Engineering	-	6	0	6
Lecturer	Electrical Engineering	Power Electronics		1		1
Teaching Assistant	-	-	-	-	-	-
Technicians and Laboratory Assistant	Electrical Engineering	Electrical Engineering	-	2	0	2
Administrative and Supportive Staff	College			1	0	1
Others (specify)	-	-	-	-	-	-

F. Learning Resources, Facilities, and Equipment:

1. Learning Resources

The Electrical Engineering Program (EEP) prioritizes providing adequate and current learning resources to support student success. This aligns with the College of Engineering's policy, recognizing that quality learning materials are crucial for preparing graduates for the labor market.

Resource Selection and Approval:

- Specialized committees regularly review and update learning resources lists, ensuring they are relevant and meet program objectives.
- Proposed lists are presented to the department council for discussion and refinement.
- Final approval is granted by the college council before submission to the university's purchase department.

Resource Adequacy and Feedback:





- Operative procedures guarantee that available resources effectively support teaching and learning.
- Regular feedback from faculty and students is actively sought to assess the appropriateness of learning materials for achieving program outcomes.

Computing Resources and Support:

- The Department of Information Technology (DIT) manages the maintenance and upgrades of all computing resources used by students and faculty.
- DIT technicians readily provide technical support for equipment and computing resources in offices and laboratories, ensuring uninterrupted learning experiences.

The EEP's resource selection process, feedback mechanisms, and dedicated technical support ensure that students have access to high-quality, up-to-date learning materials, ultimately contributing to their success in the program and the job market.

2. Facilities and Equipment

Temporary Location:

The College of Engineering (COE) currently operates on the 3rd floor of the Science College building while its dedicated building is under construction. This temporary arrangement ensures all necessary facilities and resources are available to deliver the Electrical Engineering Program (EEP).

Classrooms:

- Suitably sized and well-lit classrooms equipped with modern instructional aids like smart boards, video projectors, and internet access.
- Traditional lecture format with individual chairs for comfortable learning.

Laboratories:

- **Science Building:**
 - **Shared Computer Laboratory:** Serves all engineering programs and supports scholarly activities for both faculty and students.
 - **Adequate computing resources:** Centralized IT platforms track enrollment, academic progress, and offer online resources.
 - **E-library and search engines:** Provide access to paper and electronic references.
 - **Software tools:** Prepare graduates for successful careers by using industry-standard software.
- **Engineering Laboratories Building:**
 - Dedicated EEP laboratories for various specialized courses:
 - Power System
 - Electrical Machine
 - Power Electronics
 - Electrical & Electronics Measurements
 - Basic Electrical Engineering



- Electronics
- Communications
- Digital Systems
- Microprocessors & Microcontrollers
- Automatic Control
- Well-equipped: Laboratories are constantly updated with modern equipment to meet program needs.

Offices:

- Administration and faculty offices are conveniently located on the 2nd corridor of the 3rd floor in the Science building.
- Adequate office space with good lighting, ventilation, and modern amenities.
- Desks, chairs, bookcases, computers, internet access, printers, photocopiers, and phones facilitate efficient work.
- Dedicated conference room for program meetings.

Library Services:

- **Shared library:** Located on the 2nd floor of the Science building and supplemented by the University's Central Library.
- **Diversified collection:** Books, textbooks, technical reports, and papers in both English and Arabic.
- **Dedicated engineering section:** Stocked with relevant resources covering all EE fields.
- **Extensive online access:** Faculty and students can utilize Academic Digital Library (ADL) and Saudi Digital Library (SDL) for world-wide and national databases.
- **Book acquisition:** EEP faculty can request additional resources from the Deanship of Library Affairs.

While temporarily housed in the Science building, the College of Engineering ensures its facilities and equipment adequately support the EEP's educational objectives and student learning outcomes. Modern classrooms, well-equipped labs, comfortable offices, and extensive library resources provide a comprehensive environment for a successful learning experience.

3. Procedures to ensure a healthy and safe learning environment

The College of Engineering (COE) at Northern Border University prioritizes the health and safety of its students, faculty, and staff. We adhere to strict safety standards established by the Department of Security and Safety and implement comprehensive procedures to create a secure and supportive learning environment.

General Safety Measures:

- **Active protection:** All university buildings, including classrooms, laboratories, offices, and libraries, are equipped with automatic fire detection systems, fire extinguishers, fire hoses,





evacuation signage, and emergency response plans. Regular drills and awareness programs ensure timely and effective responses to potential hazards.

- **Emergency Response System:** An efficient system assesses emergencies, coordinates responses, and notifies individuals for safe and swift evacuation.

Laboratory Safety:

- **Electrical Safety:** Emphasis is placed on safe handling of electricity in Electrical Engineering Program (EEP) labs. Students receive thorough training on electrical hazards and safe laboratory practices through dedicated instruction and individual safety manuals.
- **Laboratory-Specific Procedures:** Each EEP lab has a specific manual outlining safety guideline for tools, equipment, and activities. Instructors emphasize safe practices and ensure adherence to these guidelines.
- **Safety Equipment:** Personal protective equipment like gloves, eye protection, and workwear are readily available in all labs. Additionally, aid kits, eyewashes, showers, and emergency phones are strategically located for immediate access.
- **Safe Storage:** All hazardous materials are stored securely according to regulations.

Communication and Collaboration:

- **Safety Committee:** The COE's Safety Committee (SC) regularly updates and distributes safety brochures to ensure awareness and compliance.
- **Supervisory Involvement:** Laboratory supervisors identify specific safety requirements and notify department heads. The SC chairman then informs the Dean about overall program needs for a safe learning environment.
- **Student Responsibility:** Students are required to wear personal safety equipment in workshops and laboratories. Emergency exits, safety signs, and instructions are prominently displayed in all COE buildings. Instructors provide clear safety instructions before using tools, equipment, and computing resources.

Emergency Response:

In case of an emergency, department heads inform the Dean who, in consultation with relevant authorities, takes immediate action to minimize harm and safeguard individuals and facilities.

Overall, the COE's comprehensive safety procedures create a secure and healthy learning environment for all. These measures, combined with ongoing communication and collaboration, demonstrate our unwavering commitment to the well-being of our community.

G. Program Quality Assurance:

1. Program Quality Assurance System

Provide a link to quality assurance manual.

[EE-Quality System Manual Link](#)





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

This program utilizes various strategies to assess the quality of courses taught by other departments, ensuring they align with program learning outcomes (PLOs) and contribute to student success:

1. Curricular Design and Planning:

- **Course specifications:** The program readily accesses specifications of courses taught by other departments, including university and college requirements. These specifications provide insights into the course content, learning resources, and assessment methods.
- **Peer review:** The program manager engages in collaborative discussions with peers from other programs. This dialogue focuses on course content design, alignment with PLOs, and resource quality, aiming to identify potential areas for improvement.

2. Curricular Delivery:

- **Assessment reports:** While the program cannot directly control teaching strategies or assessment methods for external courses, it leverages college-required courses' end-of-term reports for assessment purposes.
- **External assessment data:** The program actively analyzes assessment results from other departments to identify areas where courses might require adjustments to better support program objectives.

3. Procedures Used to Ensure the Consistency between Main Campus and Branches (including male and female sections).

Not Applicable

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

The Electrical Engineering program at Northern Border University adheres to a rigorous assessment plan to ensure its Program Learning Outcomes (PLOs) are effectively measured and continuously improved. This plan ensures that graduates possess the necessary knowledge, skills, and values to excel in their chosen careers.

This plan incorporates both direct and indirect assessment methods.

1. **Direct Assessment:** This involves mapping Course Learning Outcomes (CLOs) to relevant PLOs and utilizing various assessment tools within each course.
 - **Course-level assessment (Every semester):** Each course contributes to achieving specific PLOs, as mapped in a designed matrix in section 4. Course assessment tools, such as exams, projects, and presentations, are designed to evaluate students' acquisition of knowledge, skills, and values aligned with the mapped PLOs.



- **Program-level assessment (Every academic year):** Assessment data from individual courses, typically those at higher levels, are aggregated and analyzed to gain insights into PLO achievement at the program level.
 - **Evaluation:** student achievement percentages are used to evaluate overall learning outcome achievement, based on pre-defined performance thresholds.
2. **Indirect Assessment:** This method collects feedback from students, alumni, and employers via surveys to determine whether the program adequately prepares graduates for the job market and satisfies the needs of the industry.

The assessment data is regularly analyzed to identify areas for improvement. This data informs curriculum revisions, teaching methodologies, and resource allocation decisions, ensuring the program remains relevant and aligned with industry needs and accreditation standards.

5. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Effectiveness of teaching & assessment	- Students - Peer Review	- Surveys - Peer Review Form - Course Portfolio	By the end of each academic Semester
Extent of Achievement of Course Learning Outcomes (CLOs)	- Students - Faculty members	- Surveys - Assessment Tools	By the end of each academic Semester
Extent of Achievement of Program Learning Outcomes (PLOs)	- Faculty Members - Quality and Academic Accreditation Committee	- Course Report - Data gathering and Statistical analysis.	By the end of each academic year
Quality of Learning Resources	- Students - Faculty - Quality and Academic Accreditation Committee	- Surveys - Course Reports - Data gathering and Statistical analysis.	By the end of the academic year
Quality of Facilities and Equipment	- Students - Faculty members - Laboratories Committee	- Surveys - Course Reports - Data gathering and Statistical analysis.	By the end of each academic year





6. Program KPIs*

The period to achieve the target 4 years.

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
1	KPI-P-01	Students' Evaluation of quality of learning experience in the program	4.5	Surveys	Every Semester
2	KPI-P-02	Students' evaluation of the quality of the courses	4.2	Surveys	Every academic Year
3	KPI-P-03	Completion rate	80%	Data gathering and Statistical analysis.	Every academic Year
4	KPI-P-04	First-year students retention rate	100%	Data gathering and Statistical analysis.	Every academic Year
5	KPI-P-05	Students' performance in the professional and/or national examinations	80%	Data gathering and analysis.	Every academic Year
6	KPI-P-06	Graduates' employability and enrolment in postgraduate programs	85% and 10%	Data gathering and Statistical analysis.	Every academic Year
7	KPI-P-07	Employers' evaluation of the program graduates' proficiency	4.4	Survey	Every academic Year
8	KPI-P-08	Ratio of students to teaching staff	6:1	Data gathering and Statistical analysis.	Every academic Year
9	KPI-P-09	Percentage of publications of faculty members	100%	Data gathering and Statistical analysis.	Every Gregorian Year
10	KPI-P-10	Rate of published research per faculty member	6.3/1	Data gathering and Statistical analysis.	Every Gregorian Year
11	KPI-P-11	Citations rate in refereed journals per faculty member	70:1	Data gathering and Statistical analysis.	Every Gregorian Year

*including KPIs required by NCAAA

H. Specification Approval Data:

Council / Committee	DEPARTMENT COUNCIL
Reference No.	MEETING MINUTES NO. (9)
Date	12/02/2024



جامعة الحدود الشمالية
NORTHERN BORDER UNIVERSITY



Attachments

من الشمال...إلى الوطن

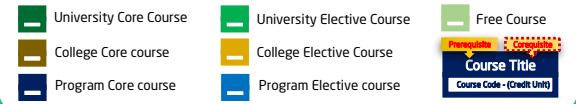


Table of Attachments

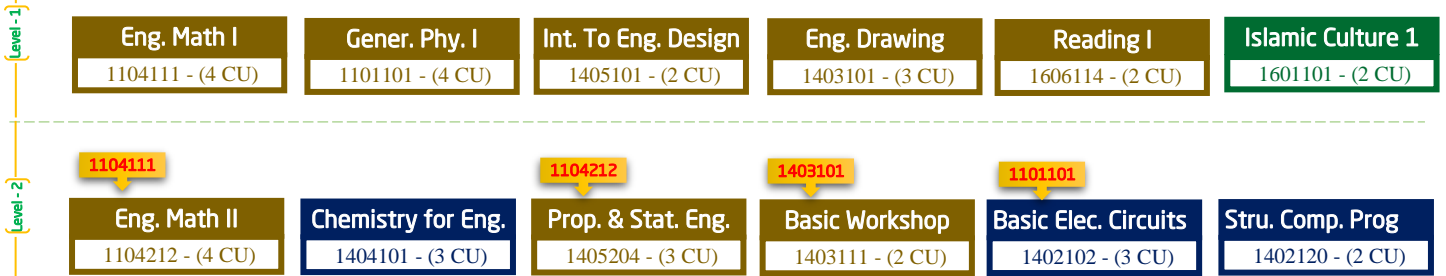
N	Elements	Link to page
1	Prerequisites Flowchart	Link
2	Consistency of the Program with the National Qualifications Framework in the Kingdom of Saudi Arabia 1444 H - 2023 G	Link
3	Consistency of the program with the Saudi Standard Classification of Educational Levels and Specializations 1441 H - 2020 G	Link
4	Mission and Objectives of the program with consistency matrices	Link

Prerequisites Flowchart

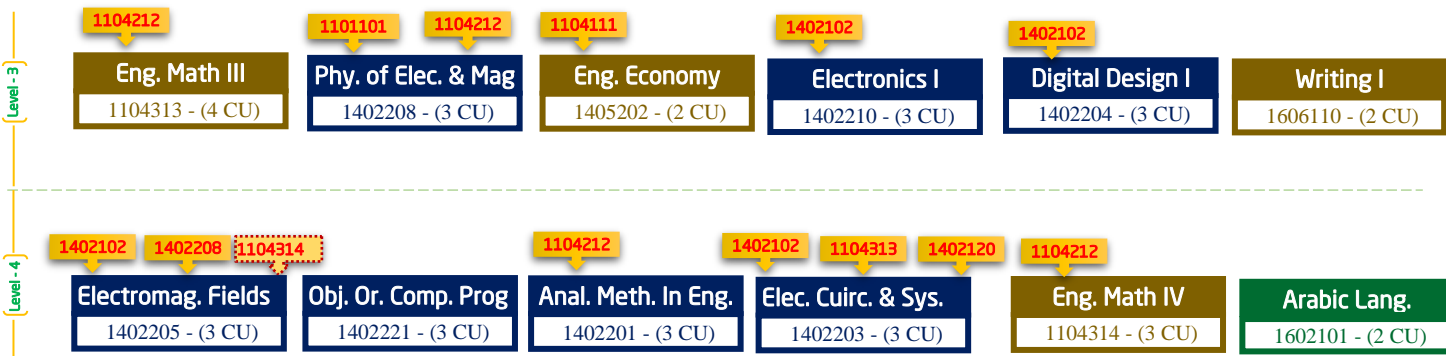
Bachelor of Science in



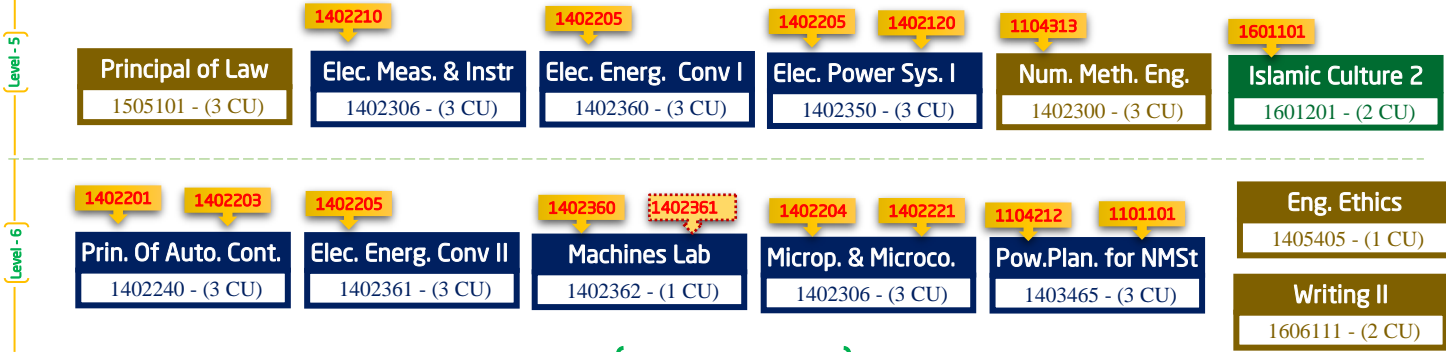
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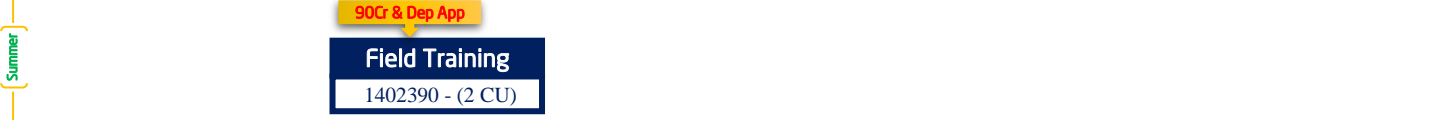
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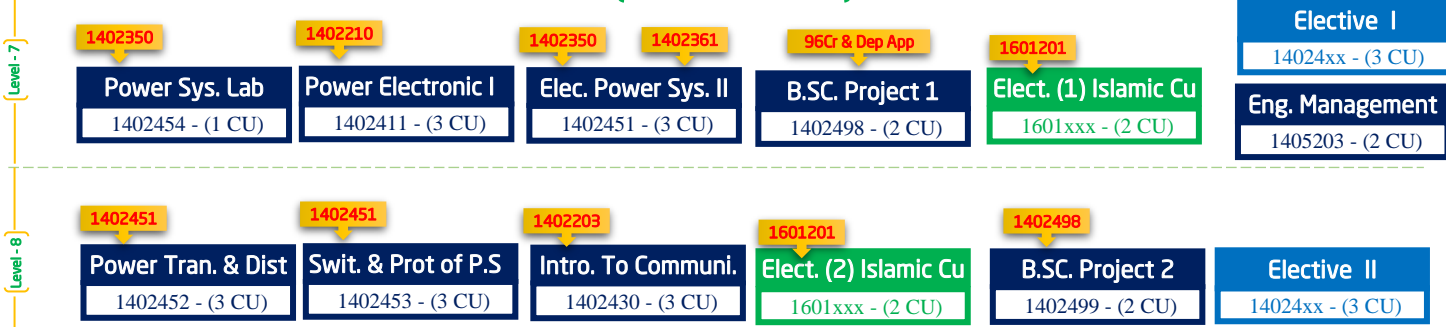
{ ACADEMIC YEAR - 3 }



{ SUMMER TERM }



{ ACADEMIC YEAR - 4 }



Consistency of the Program with the National Qualifications Framework in the Kingdom of Saudi Arabia 1441 H - 2020 G

The report on the program's consistency with the National Framework for Qualifications (NQF) includes four areas of comparison:

1. Use qualifications titles that clearly and accurately describe the educational sector, the level of qualification, and the field of study or specialization.
2. The minimum number of credit hours required for the intended qualification according to the number of years to complete the program.
3. Learning Areas/Domains (Knowledge and Understanding - Skills - Values).
4. Consistency of the program learning outcomes (PLOs) with the levels (learning outcomes) of each domain in the National Qualifications Framework.

The following table shows the extent of the program's consistency with the Saudi Framework for Qualifications:

Field of comparison	Benchmark NQF	Program	The extent to which the program is consistent with NQF
Program level and degree title	Level 6 Bachelor	Level 6 Bachelor of 135	The program title describes the level of the degree and the major as introduced in NQF
Credit hours and number of number of years in the program	<ul style="list-style-type: none"> • At least 120 credits (for 4-year undergraduate programs) • At least 150 credit hours (for 5-year undergraduate programs) At least 3 years' bachelor's degree 	135 Credit Hours (4 Years)	The Credit hours are consistent with NQF because it falls within the specified range for the number of hours for undergraduate programs in the NQF, which exceeding the minimum of 120 credit hours for 4 years program. And the number of years of the Electrical Engineering program that exceeds to the minimum 3 years bachelor's degree.
Learning Domains	<ul style="list-style-type: none"> • Knowledge and Understanding • Skills • Values 	<ul style="list-style-type: none"> • Knowledge and Understanding • Skills • Values 	The learning domains are consistent as the program has the same learning areas mentioned in the NQF.
Learning outcomes	As shown in Matrix 1	As shown in Matrices 2 and 3	The learning outcomes matrix shows the consistency of all learning outcomes for the level 6 defined in the NQF with the Electrical Engineering program learning outcomes.

Matrix 1. The targeted learning outcomes of the bachelor's program in the NQF

Domains	Code	Learning outcomes for level 6, bachelor's degree
Knowledge and understanding	K1	Broad in-depth integrated body of knowledge and comprehension of the underlying theories, principles, and concepts in one or more disciplines or field of work,
	K2	In-depth knowledge and comprehension of processes, materials, techniques, practices, conventions, and/or terminology,

		K3	A broad range of specialized knowledge and understanding informed by current developments of a discipline, profession, or field of work.
		K4	Knowledge and comprehension of research and inquiry methodologies.
Skills	Cognitive Skills	S1	Apply integrated theories, principles, and concepts in various contexts, related to a discipline, profession, or field of work
		S2	Solve problems in various complex contexts in one or more disciplines or fields of work,
		S3	Use critical thinking and develop creative solutions to current issues and problems, in various complex contexts, in a discipline, profession or field of work,
		S4	Conduct inquiries, investigations, and research for complex issues and problems,
	Practical and Physical Skills	S5	Use and adapt advanced processes, techniques, tools, instruments, and/or materials in dealing with various complex practical activities,
		S6	Carry out various complex practical tasks and procedures related to a discipline, professional practice, or field of work.
	Communication and ICT Skills	S7	Communicate effectively to demonstrate theoretical knowledge comprehension and specialized transfer of knowledge, skills, and complex ideas to a variety of audiences,
		S8	Use mathematical operations and quantitative methods to process data and information in various complex contexts, related to a discipline or field of work,
		S9	Select, use, and adapt various standard and specialized digital technological and ICT tools and applications to process and analyse data and information to support and enhance research and/or projects.
Values, Autonomy and Responsibility	Values and Ethics	V1	Demonstrate commitment to professional and academic values, standards, and ethical codes of conduct, and represent responsible citizenship and coexistence with others
	Autonomy and Responsibility	V2	Effectively plan for and achieve academic and/or professional self- development, assess own learning and performance, and autonomously make decisions regarding self-development and/or tasks based on convincing evidences.
		V3	Autonomously and professionally manage tasks and activities related to the discipline and/or work,
		V4	Collaborate responsibly and constructively on leading diverse teams to perform a wide range of tasks while playing a major role in planning and evaluating joint work,
		V5	Actively participate in advancing the discipline and society.

Consistency of the Program with the Saudi Standard Classification of Educational Levels and Specializations 1441 H - 2020 G

Table 15. Consistency with the Saudi Standard Classification of Educational Levels and Specializations

Name		Code	
Broad field	Engineering, Manufacturing And Construction	(07)	
Narrow field	Engineering And Engineering Trades	(071)	
Detailed Field	Electricity And Energy	(0713)	
Specialization Name	Electrical Engineering	(071301)	
Items	As Required in Saudi Standard Classification of Educational Levels and Specializations	Consistency of the current program	
		Yes	No
Definition	This specialization aims to provide the student with the essential knowledge and skills to design, analyse and develop various electrical systems such as electronic circuits and systems, communication systems, generation and transmission systems of electric forces, automatic control systems and smart systems.	✓	
Other Specializations Included In The Definition	<ul style="list-style-type: none"> • Electrical Power Engineering • Electrical Engineering and Computers • Power Engineering and Electrical Machines • Electrical Machinery and Power Electronics • Air Conditioning and Refrigeration Engineering 	✓	
Important Courses Under This Specialization	Principles and analysis of electrical circuits	✓	
	Electromagnetism engineering	✓	
	Signal and systems analysis	✓	
	Microelectronic devices and circuits	✓	
	Communication theory and systems	✓	

Mission and Objectives of the program with consistency matrices

Table 16. Consistency of the program mission with the mission of the college and the university

Domains of consistency	Teaching and Learning	Research and Innovation	Community Engagement	Other	Number of words
University mission	We are a regionally serving, comprehensive university committed to educational excellence. Guided by our core values, heritage, and place, We deliver innovative educational programs characterized by outcomes that leverage the human, economic, cultural, and natural resources for the Northern Borders Region and beyond.				
Consistency of the university's mission with consistency areas	✓	✓	✓		43
College mission	To provide high quality engineering programs, distinguished scientific research and contribute to the community service to meet the needs of development and supporting mining fields in the northern border region and throughout the kingdom				
Keywords from the college mission through which consistency is achieved	Teaching and Learning	Research and Innovation	Community Engagement	Other ¹	Number of words
provide high quality engineering programs	✓				66
distinguished scientific research		✓			
contribute to the community service			✓		
Developed program mission					
Keywords from the developed program mission through which consistency is achieved	Teaching and Learning	Research and Innovation	Community Engagement	Other	Number of words
To prepare electrical engineering graduates that compete in the labor market, sustain self-learning and professional development, and contribute to scientific research	✓				24
community service		✓			
			✓		

Table 17. Consistency of the goals of the program with the mission of the program

Code	Program Objectives (POs)
P01	Serve competently in the professional career and academia by demonstrating high-quality knowledge and skills in the Electrical Engineering field.
P02	Display self-learning, research, and critical thinking capability and take initiative in advancing their education and professional standing.
P03	Function as a team member with the capability for leadership and effective communication.
P04	Exhibit commitment to social responsibilities, ethical values, and meaningful community contributions.

Table 18. Matrix of consistency of program goals with the Objectives of the university

Program Goals	Matrix of consistency of program goals with the goals of the university			
	U01	U02	U03	U04
P01	✓			
P02		✓		
P03	✓			
P04			✓	✓

Table 19. Matrix of consistency of program goals with the Objectives of the college

Program goals	Matrix of consistency of program outcomes with the goals of the college					
	CG1	CG2	CG3	CG4	CG5	CG6
P01	✓	✓				
P02			✓	✓	✓	✓
P03	✓	✓				
P04					✓	

Table 20. Consistency of the goals of the developed program with NBU Graduate Attributes

Developed program goals	Consistency Matrix of the goals of the developed program with NBU Graduates Attributes						
	GA1	GA2		GA3	GA4	GA5	GA6
	National Identity	Self-management	Critical thinking	Digital culture	Teamwork	Entrepreneurship	Communication skills
PG1	✓			✓			
PG2			✓				
PG3		✓			✓	✓	✓
PG4		✓					