



FACULTY OF ENGINEERING
NAHDA UNIVERSITY
IN BENI SUEF
كلية الهندسة
جامعة النهضة، بني سويف



Program Specification of Electrical and Renewable Energy Engineering Program

Program Specification

Electrical and Renewable Energy Engineering Program

Bylaw 2020 - (160 Credit hours) – (2025-2026)

1. Basic Information - (معلومات أساسية)

Program Title (according to what is stated in the bylaw):	Bachelor of Engineering of Electrical and Renewable Energy	
Total number of credit hours of the program:	160 Credit hours	
Number of academic years/levels (expected program duration):	5 years (5 levels)	
Department (s) Participating (if any) in teaching the program:	- Communications and Computers Engineering Department - Basic Sciences Department	
Faculty:	Faculty of Engineering	
University/Academy:	Nahda University	
Program divisions (tracks) in the final year (if any):	None	
Partnerships with other parties and the nature of each (if any):	None	
Name of the program coordinator (attach the assignment decision):	Dr. Mohamed Kourany Saad	
Program Specification Approval Date:	13 / 9 / 2025	16 / 9 / 2025
Council responsible for Program Specification Approval (Attach the Decision / Minutes):	Department council	Faculty council



Program Specification of Electrical and Renewable Energy Engineering Program

2. Program Aims - (أهداف البرنامج)

The main objective of the "Electrical and Renewable Energy Engineering Program" is to prepare an electrical and renewable energy engineer who is **capable of**:

- PA1.** Providing a comprehensive and up-to-date engineering education in the fields of electrical and renewable energy, keeping pace with technological advancements and labor market demands.
- PA2.** Developing students professional and ethical values, fostering a sense of social responsibility, and enhancing their communication, teamwork, and commitment to engineering ethics.
- PA3.** Developing students applied and practical skills in the design, implementation, operation, development, and maintenance of electrical and renewable energy systems, and improving their innovation and problem-solving abilities.
- PA4.** Preparing graduates capable of competing locally, regionally, and internationally through learning outcomes that meet quality and engineering accreditation standards.
- PA5.** Promoting applied scientific research in the fields of electrical energy, renewable energy, control systems, and energy efficiency, supporting sustainable development and digital transformation.
- PA6.** Developing community and industry partnerships by providing services, consultations, and training programs that support industry and community needs.
- PA7.** Establishing the principles of quality and continuous improvement in the educational process, and periodically evaluating learning outcomes to ensure their alignment with technological advancements.



Program Specification of Electrical and Renewable Energy Engineering Program

3. Program Structure (Curriculum) - (هيكل البرنامج) (المنهج الدراسي)

3-1. Program Components – (مكونات البرنامج)

Item	Requirement Category/Type	Credit hours	The percentage of the hours
I	University Requirements	14	8.75 %
Specialization requirements			
II	Faculty Requirements	41	25.625 %
	Electrical and Renewable Energy Engineering program	105	65.625 %
Total credit hours		160	100 %

Requirement Category/Type		Number of Courses	Number of Credit Hours/Points	Percentage from the total number of hours/points
University Requirements		7 (Compulsory)	14 (Compulsory)	8.75 %
Faculty/College Requirements (if applicable)		17 (14 compulsory + 3 elective)	41 (35 compulsory + 6 elective)	25.625 %
Program Requirements		39	105	65.625 %
Requirements of the majors/ divisions/ tracks/ specializations in the final year (if any)	Major	22 (Compulsory)	60 (Compulsory)	37.5 %
	Minor	13 (9 compulsory + 4 elective)	39 (27 compulsory + 12 elective)	24.375 %
Other requirements	Field Training	2 (Compulsory)	0 (Pass without credit hours)	0 %
	Graduation Project	2 (Compulsory)	6 (Compulsory)	3.75 %
	Mandatory training year	-	-	-
	Other (to be mentioned): Aptech-Computer Skills	3	0 (Pass without credit hours)	0 %
Total Compulsory Courses		59	142	88.75 %
Elective Courses		7	18	11.25 %
Total		66	160	100 %



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3-2. Program courses according to the expected study plan

(مقررات البرنامج تبعاً للخطة الدراسية المتوقعة)

Academic Level	Semester	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Credits Hours	Number of Weekly Contact Hours				Pre-requisites
							Lec	Tut	Lab	TT	
Level 1	Semester 1	BAS011	Mathematics (1)	Compulsory	Faculty Requirements	3	2	2	0	4	
Level 1	Semester 1	BAS012	Vibration and Waves	Compulsory	Faculty Requirements	3	2	1	1	4	
Level 1	Semester 1	BAS013	Statics	Compulsory	Faculty Requirements	3	2	2	0	4	
Level 1	Semester 1	BAS014	Engineering Chemistry	Compulsory	Faculty Requirements	3	2	1	1	4	
Level 1	Semester 1	BAS015	Engineering Drawing (1)	Compulsory	Faculty Requirements	3	2	3	0	5	
Level 1	Semester 1	CCE011	Computing in Engineering	Compulsory	Faculty Requirements	2	2	1	1	4	
Level 1	Semester 1	NUB	Complete hours from NUB Compulsory	Compulsory	University Requirements	1	1	0	0	1	
Level 1	Semester 2	BAS021	Mathematics (2)	Compulsory	Faculty Requirements	3	2	2	0	4	BAS011
Level 1	Semester 2	BAS022	Electricity and Magnetism	Compulsory	Faculty Requirements	3	2	1	2	5	BAS012
Level 1	Semester 2	BAS023	Dynamics	Compulsory	Faculty Requirements	3	2	2	0	4	BAS013
Level 1	Semester 2	BAS024	Fundamentals of Engineering	Compulsory	Faculty Requirements	2	2	0	0	2	
Level 1	Semester 2	BAS025	Engineering Drawing (2)	Compulsory	Faculty Requirements	1	0	0	3	3	BAS015
Level 1	Semester 2	MPE021	Production Engineering	Compulsory	Faculty Requirements	2	2	0	2	4	
Level 1	Semester 2	ENG111	English (1)	Compulsory	University Requirements	1	1	0	0	1	
Level 1	Semester 2	NUB	Complete hours from NUB Compulsory	Compulsory	University Requirements	3	3	0	0	3	
Level 2	Semester 3	BAS111	Mathematics (3)	Compulsory	Program Major Requirements	2	2	1	0	3	BAS021
Level 2	Semester 3	BAS112	Building Safety and Fire Protection	Compulsory	Faculty Requirements	2	2	0	0	2	
Level 2	Semester 3	CCE111	Electrical Circuits (1)	Compulsory	Program Major Requirements	3	2	1	2	5	BAS022
Level 2	Semester 3	CCE112	Computer Programming	Compulsory	Program Major Requirements	3	2	0	2	4	CCE011
Level 2	Semester 3	GME113	Thermodynamics (1)	Compulsory	Program Major Requirements	3	2	2	0	4	BAS014
Level 2	Semester 3	ERE111	Energy Resources and Renewable Energy	Compulsory	Program Major Requirements	2	2	1	0	3	
Level 2	Semester 3	NUB	Complete hours from NUB Compulsory	Compulsory	University Requirements	3	3	0	0	3	
Level 2	Semester 4	BAS121	Mathematics (4)	Compulsory	Program Major Requirements	2	2	1	0	3	BAS111
Level 2	Semester 4	BAS122	Probability and Statistics	Compulsory	Faculty Requirements	2	2	1	0	3	
Level 2	Semester 4	CCE121	Electrical Circuits (2)	Compulsory	Program Major Requirements	3	2	0	2	4	CCE111
Level 2	Semester 4	CCE122	Electronic Devices	Compulsory	Program Major Requirements	3	2	1	2	5	CCE111
Level 2	Semester 4	ERE121	Energy Conversion	Compulsory	Program Major Requirements	3	2	2	0	4	CCE111
Level 2	Semester 4	ENG112	English (2)	Compulsory	University Requirements	1	1	0	0	1	ENG111
Level 2	Semester 4		Project Management Elective	Elective	Faculty Requirements	2	2	1	0	3	
Level 2	Semester 4		Structures and Properties of Materials Elective	Elective	Faculty Requirements	2	2	0	1	3	
Level 3	Semester 5	CCE211	Electromagnetic Fields	Compulsory	Program Major Requirements	2	2	1	1	4	BAS111, CCE121
Level 3	Semester 5	CCE212	Electrical Measurements and Instrumentation	Compulsory	Program Major Requirements	3	2	0	2	4	CCE111
Level 3	Semester 5	GME212	Fluid Mechanics and Turbo-Machinery	Compulsory	Program Major Requirements	3	2	0	2	4	GME113
Level 3	Semester 5	ERE212	Fundamentals of Photovoltaic	Compulsory	Program Minor Requirements	3	2	1	2	5	CCE122



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Academic Level	Semester	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Credits Hours	Number of Weekly Contact Hours				Pre-requisites
							Lec	Tut	Lab	TT	
Level 3	Semester 5	GME214	Aerodynamics	Compulsory	Program Minor Requirements	3	2	2	0	4	BAS023
Level 3	Semester 5	NUB	Complete hours from NUB Compulsory	Compulsory	University Requirements	3	3	0	0	3	
Level 3	Semester 5	ERE211	Field Training (1)	Compulsory	Program Major Requirements	0	0	0	0	0	
Level 3	Semester 6	ERE221	Electrical Machines (1)	Compulsory	Program Major Requirements	3	2	0	2	4	CCE211
Level 3	Semester 6	ERE222	Electrical Power Engineering	Compulsory	Program Major Requirements	3	2	1	1	4	CCE211
Level 3	Semester 6	ERE223	Sensors and Transducers Systems	Compulsory	Program Major Requirements	2	2	1	1	4	CCE212
Level 3	Semester 6	ERE224	Power Electronics (1)	Compulsory	Program Major Requirements	3	2	0	2	4	CCE122
Level 3	Semester 6	GME221	Heat Transfer	Compulsory	Program Major Requirements	3	2	0	2	4	GME113
Level 3	Semester 6	ENG113	English (3)	Compulsory	University Requirements	2	2	0	0	2	ENG112
Level 3	Semester 6		Engineering Economy Elective	Elective	Faculty Requirements	2	2	1	0	3	
Level 4	Semester 7	ERE312	Power Electronics (2)	Compulsory	Program Minor Requirements	3	2	0	2	4	ERE224
Level 4	Semester 7	ERE313	Fundamentals of Power System Analysis	Compulsory	Program Major Requirements	3	2	2	0	4	ERE222
Level 4	Semester 7	ERE314	Solar Energy	Compulsory	Program Minor Requirements	3	2	1	2	5	GME221
Level 4	Semester 7	ERE315	Wind Energy	Compulsory	Program Minor Requirements	3	2	1	2	5	GME214
Level 4	Semester 7	ERE316	Modelling and Simulation of Engineering Systems	Compulsory	Program Major Requirements	3	2	0	2	4	BAS121
Level 4	Semester 7	ERE317	Electrical Machines (2)	Compulsory	Program Minor Requirements	3	2	0	2	4	ERE221
Level 4	Semester 7	ERE311	Field Training (2)	Compulsory	Program Major Requirements	0	0	0	0	0	ERE211
Level 4	Semester 8	ERE321	Energy Graduation Project (1)	Compulsory	Program Minor Requirements	3	1	0	4	5	115 Cr. hrs.
Level 4	Semester 8	ERE322	Economics of Generation, Transmission, and Operation	Compulsory	Program Minor Requirements	3	2	2	0	4	ERE111,ER E222
Level 4	Semester 8	ERE323	Biomass and waste Conversion Technology	Compulsory	Program Minor Requirements	3	2	2	1	5	GME221
Level 4	Semester 8	ERE324	Automatic Control Systems	Compulsory	Program Major Requirements	3	2	0	2	4	ERE316
Level 4	Semester 8	ERE325	Power System Protection	Compulsory	Program Major Requirements	3	2	2	0	4	ERE222
Level 4	Semester 8	ERE326	Utilization and Management of Electrical Energy	Compulsory	Program Minor Requirements	3	2	2	1	5	ERE314,ER E315
Level 5	Semester 9	ERE411	Energy Graduation Project (2)	Compulsory	Program Minor Requirements	3	0	0	6	6	ERE321
Level 5	Semester 9	ERE412	Microprocessor-Based Automated Systems	Compulsory	Program Major Requirements	2	2	1	1	4	ERE324,ER E312
Level 5	Semester 9		Energy Elective (A)	Elective	Program Minor Requirements	3	2	2	0	4	
Level 5	Semester 9		Energy Elective (A)	Elective	Program Minor Requirements	3	2	2	0	4	
Level 5	Semester 9		Energy Elective (B)	Elective	Program Minor Requirements	3	2	2	0	4	
Level 5	Semester 9		Energy Elective (B)	Elective	Program Minor Requirements	3	2	2	0	4	



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4. Academic Standards - (المعايير الأكاديمية المتبناة)

• Adopted Academic Standards (NARS/ARS): Choose an item.

The matrix of the Academic Reference Standards (ARS) with the National Academic Reference Standards (NARS):

ARS (Electrical and Renewable Energy Engineering Program)	NARS 2018 (Engineering)
Competencies for general engineering graduate (Level A)	Competencies for general engineering Graduate (Level A)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the Electrical and Renewable Energy Engineering Program and within the principles and contexts of sustainable design and development.	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
A5. Practice research techniques and methods of investigation as an inherent part of learning.	A5. Practice research techniques and methods of investigation as an inherent part of learning.
A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.
A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.	A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.
A8. Communicate effectively – graphically, verbally and in writing with a range of audiences using contemporary tools.	A8. Communicate effectively – graphically, verbally and in writing with a range of audiences using contemporary tools.
A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
Competencies for the basic electrical engineering graduate (level B)	Competencies for the basic electrical engineering graduate (level B)
B1. Select, model and analyze electrical power systems applicable to the Electrical Power and Renewable Energy Engineering Program by applying the concepts of: generation, transmission and distribution of electrical power systems.	B1. Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.
B2. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	B2. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
B3. Design and implement: elements, modules, sub-systems or systems in electrical / electronic / digital engineering using technological and professional tools.	B3. Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.



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ARS (Electrical and Renewable Energy Engineering Program)	NARS 2018 (Engineering)
B4. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.	B4. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.
B5. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.	B5. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.
Competencies for The Electrical and Renewable Energy Engineering Program graduate must be able to (Level D):	
D1. Model, analyze and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics and Vibrations.	B1 (Mechanical Engineering). Model, analyze and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics and Vibrations.
D2. Identify, analyze and evaluate the energy's conversion processes and management techniques;	
D3. Model, analyze, design, implement, test and operate renewable energy systems such as solar photovoltaics, solar thermal, wind, biomass and waste, hydro-tidal and wave, and other renewable energy applications.	
D4. Select, analyze and control appropriate driving systems for different energy applications;	

• Date of Adoption of Standards in the governing Council: 9/17/2019

- Adopted Academic Standards (NARS/ARS):	Academic Reference Standards (ARS)
- Date of Adoption of Standards in the governing Council:	
- Adoption of National Academic Reference Standards (NARS 2018):	The Faculty Council, in its meeting No. (57) on 17/9/2019.
- Adoption of Academic Reference Standards (ARS):	The Faculty Council, in its meeting No. (102) on 17/10/2023, based on the recommendation of the Department Council in its meeting No. (1) in academic year 2023/2024, on 13/9/2023.



Program Specification of Electrical and Renewable Energy Engineering Program

5. Matrix of Academic Standards (Program Outcomes POs) with Courses

مصفوفة المعايير الأكاديمية (مخرجات البرنامج) مع المقررات

5-1. Matrix of Academic Standards with “Compulsory” Courses:

Code	Course Title (Compulsory Course)	CHs	Academic Standards (Mention code only)																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	D1	D2	D3	D4	
Nahda University Requirements Courses																						
HUM101	Human Rights	3			*		*		*	*												
REM101	Scientific Thinking	3		*	*	*	*	*	*	*												
MGT101	Principles of General Management	3			*		*		*	*	*	*										
ETS401	Professional Ethics	1			*	*			*	*												
ENG111A	English (1)	1							*	*		*										
ENG112A	English (2)	1							*	*		*										
ENG113A	English (3)	2							*	*		*										
CS-121	Aptech-Computer Skills (1)	0		*						*	*											
CS-122	Aptech-Computer Skills (2)	0		*						*	*											
CS-123	Aptech-Computer Skills (3)	0		*						*	*											
Faculty of Engineering Requirements Courses																						
BAS011	Mathematics (1)	3	*	*																		
BAS021	Mathematics (2)	3	*	*																		
BAS112	Building Safety and Fire Protection	2				*	*		*													
BAS012	Vibration and Waves	3	*				*		*													
BAS022	Electricity and Magnetism	3	*				*		*													
BAS013	Statics	3	*	*																		
BAS023	Dynamics	3	*	*																		
BAS014	Engineering Chemistry	3	*	*																		
BAS122	Probability and Statistics	2	*	*																		



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Code	Course Title (Compulsory Course)	CHs	Academic Standards (Mention code only)																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	D1	D2	D3	D4	
MPE021	Production Engineering	2		*	*	*	*	*														
BAS015	Engineering Drawing (1)	2									*	*										
BAS025	Engineering Drawing (2)	3									*	*										
CCE011	Computing in Engineering	1	*										*									
BAS024	Fundamentals of Engineering	2	*								*	*										
Electrical & Renewable Energy Engineering Program - Major REQ. (Compulsory)																						
BAS111	Mathematics (3)	2	*	*																		
CCE111	Electrical Circuits (1)	3	*	*											*		*					
CCE112	Computer Programming	3		*														*				
CCE121	Electrical Circuits (2)	3	*	*										*	*							
BAS121	Mathematics (4)	2	*	*																		
CCE122	Electronic Devices	3											*		*		*					
ERE111	Energy Resources and Renewable Energy	2	*										*			*				*		
CCE211	Electromagnetic Fields	2	*	*													*					
CCE212	Electrical Measurements and Instrumentation	3	*	*											*		*					
GME113	Thermodynamics (1)	3											*						*			
ERE121	Energy Conversion	3	*										*			*				*		
ERE222	Electrical Power Engineering	3		*		*								*	*							
ERE211	Field Training (1)	0						*	*				*			*		*		*		
ERE224	Power Electronics (1)	3		*											*		*				*	
ERE412	Microprocessor-Based Automated Systems	2		*											*	*				*		
ERE221	Electrical Machines (1)	3		*											*		*		*			
GME221	Heat Transfer	3		*									*						*			
GME212	Fluid Mechanics and Turbo-Machinery	3		*									*						*			
ERE223	Sensors and Transducers Systems	2		*											*		*				*	
ERE313	Fundamentals of Power System Analysis	3				*								*	*		*					
ERE316	Modeling and Simulation of Engineering Systems	3	*	*											*		*		*			
ERE324	Automatic Control Systems	3		*									*		*		*					
ERE311	Field Training (2)	0						*	*				*					*			*	
ERE325	Power System Protection	3											*	*	*	*	*			*		



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Code	Course Title (Compulsory Course)	CHs	Academic Standards (Mention code only)																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	D1	D2	D3	D4	
Electrical & Renewable Energy Engineering Program - Minor REQ.																						
ERE212	Fundamentals of Photovoltaic	3		*									*						*	*		
ERE317	Electrical Machines (2)	3		*								*				*			*	*		
ERE322	Economics of Generation, Transmission, and Operation	3			*								*				*		*	*		
ERE312	Power Electronics (2)	3		*										*	*		*				*	
GME214	Aerodynamics	2										*						*	*			
ERE326	Utilization and Management of Electrical Energy	3			*		*							*			*		*	*		
ERE314	Solar Energy	3			*									*				*	*	*		
ERE315	Wind Energy	3			*													*	*	*		
ERE323	Biomass and waste Conversion Technology	3					*											*	*	*		
ERE321	Energy Graduation Project (1)	3	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
ERE411	Energy Graduation Project (2)	3		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Total			20	33	11	8	9	4	12	15	9	18	8	17	8	15	7	9	14	10	4	

5-2. Matrix of Academic Standards with “Elective” Courses

Code	Course Title (Elective Course)	CHs	Academic Standards (Mention code only)																						
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	D1	D2	D3	D4				
	Nahda University Requirements Courses																								
	None																								
Faculty of Engineering Requirements Courses																									
CCE172	Properties of Electrical Materials (Elective)	2										*	*				*								
ERE273	Renewable Energy Systems and Economics (Elective)	2			*					*								*	*						
ERE373	Project Management for Electrical Engineering (Elective)	2						*			*	*													
Electrical & Renewable Energy Elective (A1)																									
ERE171	Storage Energy Technologies	3				*						*			*				*	*					
ERE172	Renewable Energy Resources Interfacing	3											*		*		*			*	*				
ERE173	Computer Application in Electrical Power Systems	3		*									*		*					*					
ERE174	Thermal Power Plants	3										*	*		*			*							



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Code	Course Title (Elective Course)	CHs	Academic Standards (Mention code only)																		
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	D1	D2	D3	D4
ERE175	Selected Topics in Renewable Energy	3										*	*		*					*	
Electrical & Renewable Energy Elective (B1)																					
ERE271	Digital Control	3			*											*				*	*
ERE272	Advanced Control on Power Systems	3			*								*			*				*	*
ERE274	Hydro-Tidal and Wave Energy	3											*					*	*	*	
ERE275	Selected Topics in Renewable Energy	3			*		*						*			*				*	*
Electrical & Renewable Energy Elective (B1)																					
ERE371	Electrical Distribution Systems Installations	3											*		*		*		*		
ERE372	Energy Management Essentials	3												*	*	*	*		*		
ERE374	Electric Drives	3												*		*	*			*	*
ERE375	Power Quality for Energy Applications	3											*			*	*				*
ERE376	Solar Energy in Buildings	3											*					*	*	*	
ERE377	Renewable Energy and Buildings	3													*		*	*	*	*	
ERE378	Selected Topics in Renewable Energy	3											*			*				*	*
Electrical & Renewable Energy Elective (B2)																					
ERE471	Renewable Energy Management	3												*	*	*	*		*		
MPE326	Quality Control	3		*	*	*						*									
MPE472	Environmental Impact of Projects	3			*	*	*														
MPE473	Environmental Control	3			*	*	*				*	*									
MPE474	Quality Systems and Assurance	3		*	*	*		*													
ERE475	Industrial Control and SCADA Systems	3	*															*	*	*	



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6. Teaching and Learning strategies/methods to achieve Program Outcomes (استراتيجيات / طرق التعليم والتعلم لتحقيق مخرجات البرنامج) (المعايير المتبناة)

I) Teaching and Learning strategies:

1- Teaching and learning strategies in traditional education:

1-1- Teaching strategies (where the faculty member is the focus)

1-1-1- Lectures

1-1-2- Field visit

1-2- Learning strategies (where the student is the focus)

1-2-1- Cooperative education

- a) Education based on group projects
- b) Education based on collective research
- c) Brainstorming

1-2-2- Interactive education strategies

- a) Self-study
- b) Reporting and research
- c) Problem solving
- d) Individual projects
- e) Education in experimental discovery

2- Distance teaching and learning strategies (e-learning)

3- Blended Learning strategies

3-1- Blended learning patterns

3-1-1- Rotation

- a) Station Rotation
- b) Lab Rotation
- c) Self Rotation
- d) Flipped Classroom

3-1-2- Flex Mode.



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II) Teaching and Learning Methods

1-	Interactive Lectures
2-	Tutorials
3-	Cooperative Learning
4-	Self-Learning
5-	Discussion
6-	Problem Solving
7-	Brain Storming
8-	Experimental Learning
9-	Report and research
10-	Projects
11-	Online Learning
12-	Hybrid Education
13-	Field Visits
14-	Case Study

III) The relationship matrix of teaching and learning methods vs. program's competencies:

To judge the compatibility of teaching and learning methods with the program's competencies, the following matrix is used:

Teaching and Learning Methods	Program's Competencies																		
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	D1	D2	D3	D4
Interactive Lectures	*	*	*	*		*		*	*		*	*	*	*	*	*	*	*	*
Tutorials	*	*	*	*		*		*			*	*	*	*	*	*	*	*	*
Cooperative Learning					*		*										*	*	*
Self-Learning					*					*							*	*	*
Discussion	*	*	*	*		*		*		*	*	*	*	*	*	*	*	*	*
Problem Solving	*	*	*	*					*		*	*	*	*	*	*	*	*	*
Brain Storming			*	*			*	*	*		*	*	*	*	*	*	*	*	*
Experimental Learning	*	*		*		*	*	*			*	*	*	*	*	*	*	*	*
Reports and Researches					*		*		*	*	*	*	*	*	*	*	*	*	*
Projects			*			*	*		*		*	*	*	*	*	*	*	*	*



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Online Learning	*			*	*				*	*	*	*					*	*	*
Hybrid Education	*		*	*	*			*	*	*	*	*			*		*	*	*
Field Visits		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Case Study			*	*					*	*	*	*	*	*	*	*	*	*	*

7. Student Assessment strategies/methods to verify and ensure students' acquisition of Program Outcomes (استراتيجيات / طرق تقييم الطلاب للتحقق من اكتساب الطلاب لمخرجات البرنامج) (المعايير المتنبئة)

I) Assessment Methods:

1-	Mid-term Written Exam
2-	Oral Questions
3-	Quizzes
4-	Field/Lab Experiments
5-	Assignments
6-	Reports and researches
7-	Presentations
8-	Final Oral Exam
9-	Final Practical Exam
10-	Applied Projects
11-	Final Written Exam

II) The relationship matrix of assessment methods vs. program's competencies:

To judge the compatibility of assessment methods with the program's competencies, the following matrix is used:

Assessment Methods	Program's Competencies																		
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	D1	D2	D3	D4
Mid-term Written Exam	*		*	*		*		*			*	*	*	*	*	*	*	*	*
Oral Questions			*		*		*	*	*	*	*	*	*	*	*	*	*	*	*
Quizzes	*			*		*		*			*	*	*	*	*	*	*	*	*
Field/Lab Experiments		*				*					*	*	*	*	*	*	*	*	*



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Assignments	*		*		*			*	*	*	*	*	*	*	*	*	*	*	*
Reports and researches			*	*	*		*		*	*	*	*	*	*	*	*	*	*	*
Presentations			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Final Oral Exam			*		*		*	*	*	*	*	*	*	*	*	*	*	*	*
Final Practical Exam		*				*					*	*	*	*	*	*	*	*	*
Applied Projects	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Final Written Exam	*		*	*		*		*			*	*	*	*	*	*	*	*	*

III) The relationship matrix of assessment methods vs. teaching and learning methods:

To judge the compatibility of assessment methods with the program's teaching and learning methods, the following matrix is used:

Assessment Methods	Program's teaching and learning methods													
	Interactive Lectures	Tutorials	Cooperative Learning	Self-Learning	Discussion	Problem Solving	Brain Storming	Experimental Learning	Reports and Researches	Projects	Online Learning	Hybrid Education	Field Visits	Case Study
Mid-term Written Exam	*	*			*	*					*	*		
Oral Questions	*	*		*	*	*		*	*	*	*	*	*	*
Quizzes	*	*			*	*					*	*		
Field/Lab Experiments	*	*						*		*			*	*
Assignments	*	*			*	*		*		*	*	*		
Reports and researches	*	*		*	*			*		*	*	*	*	*
Presentations	*	*		*	*				*	*	*	*	*	*
Final Oral Exam	*	*		*	*	*		*	*	*	*	*	*	*
Final Practical Exam	*	*						*		*			*	*
Applied Projects	*	*	*	*	*	*	*	*	*	*		*	*	*
Final Written Exam	*	*			*	*					*	*		



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8. Program Key Performance Indicators – (مؤشرات قياس أداء البرنامج)

No.	Performance Indicator	Target Level	Assessment Method	Measurement time
1-	Overall success rate of the students	$\geq 70 \%$	Analysis of students' results	At the end of academic year
2-	Student satisfaction level with the program	$\geq 80 \%$	questionnaire	At the end of academic year
3-	Level of job satisfaction among academic staff	$\geq 80 \%$	questionnaire	At the end of academic year
4-	Graduates' satisfaction with the program after graduation	$\geq 80 \%$	questionnaire	At the end of academic year
5-	Employers' satisfaction with program graduates	$\geq 70 \%$	questionnaire	At the end of academic year

Name & Signature
Program Coordinator

Dr. Mohamed Kourany Saad

Name and Signature Dean of the
Faculty

Prof. Dr. Salem M. ElKhodary

فريق توصيف البرنامج وتبنى المعايير الأكاديمية لبرنامج الطاقة الكهربائية والمتجددة بكلية الهندسة – جامعة النهضة بني سويف.

التوقيع

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