International Academy for Engineering and Media Science

Engineering Division

Electrical Power Engineering Department

Program Specification

For

Electrical Power Engineering Program

Bylaw 2021

Program
Specification
International Academy for Engineering and Media Science
Engineering Division

A- Basic Information

1	**Program title**	:	Electrical Power Engineering
2	**Program type**	:	Single
3	**Department**	:	Electrical Power and Machines Engineering
4	**Program coordinator**	:	Dr. Moustafa Hassan
5	**External Evaluators**	:	Prof. Dr. Sayed Abo-Elsood Syaed Ward
6	**Internal Evaluators**	:	Prof. Dr. Said Mohamed El-Halafawy
7	**Date of program Bylaw approval**	:	Ministerial decision No. 921 dated 13/03/2022
8	**Date of program specification approval**	:	10/2023

B- Professional Information

1. Electrical Power Engineering Program Mission

The electrical power and machines engineering program commits to qualify distinguished graduates who are capable of innovation and development in the field of electrical power and machines engineering to compete in the local and regional labor market according to the national academic reference standards to meet the goals of sustainable development under a strict adherence to the engineering ethics and code of conduct.

2. Program Aims

The Electrical Power Engineering program aims to provide prospective engineers with appropriate theoretical knowledge, basic science, humanities, and technical skills which allow the graduates to work efficiently in local and regional industries and to display basic competency in each of the technical areas identified as essential to electrical power engineers.

After completing the program, the graduate will be able to:

Obj1. Learn and practice a broad range of engineering knowledge and specialized skills.
Obj2. Integrate creative thinking, modern engineering tools, skills to solve engineering problems.
Obj3. Collaborate, communicate, and lead a team from different disciplines within a framework of ethics and international standards.
Obj4. Contribute in the development of the profession and the community and engage in recent research studies.
Obj5. Employ sustainable and environmentally friendly resources and recognize the importance of the environment.
Obj6. Design, maintain and utilize Electrical/Electronic systems using appropriate tools and techniques and following appropriate regulations and standards.
Obj7. Select, model, and maintain electrical power systems and machines by applying the concepts of: generation, transmission and distribution following the related standards.
Obj8. Investigate and assess the performance of high voltage equipment safely.
Obj9. Plan and rate electrical power control systems and components using appropriate tools and techniques.

3. Graduate Attributes of Electrical Power Engineering Program

The Electrical Power Engineering program commits to prepare graduates with specifications that meet the needs of the labor market in accordance with the national academic reference standards to meet the goals of sustainable development, so that the electrical power and machines engineering graduate must:

GA1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations.
GA2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.
GA3. Behave professionally and adhere to engineering ethics and standards.
GA4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.
GA5. Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community.

GA6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles.

GA7. Use techniques, skills and modern engineering tools necessary for engineering practice.

GA8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post- graduate and research studies.

GA9. Communicate effectively using different modes, tools and languages with various audiences, to deal with academic/professional challenges in a critical and creative manner.

GA10. Demonstrate leadership qualities, business administration and entrepreneurial skills.

GA11. Demonstrate a comprehensive knowledge and understanding of system modeling, energy management, operating and control principles associated with electrical power systems.

GA12. Apply appropriate computer software packages to design, model, and simulate electrical power systems.

GA13. Design electrical power systems generated from conventional and renewable sources, using technological and professional tools.

GA14. Test, maintain and operate electrical power systems.

GA15. Gain the skills needed for the market such as utilizing Programmable Logic Controllers (PLC), Distributed Control Systems (DCS), AC and DC drives, and Supervisory Control and Data Acquisition (SCADA).

4. Relationship of Graduate Attributes with Program Aims

Table 1 shows the relationship between the program aims and graduate attributes

		Graduate Attributes														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Program Aims	1	*						*								
	2		*					*								
	3			*	*				*	*	*					
	4			*		*			*							
	5						*							*		
	6											*	*	*	*	
	7											*		*	*	
	8												*		*	
	9											*	*			*

5. The Academic Reference for the Program

In the Framework of the National Academic Reference Standards for the Engineering Sector 2018 (NARS 2018), the program competencies are classified into three levels:

- Level A: This level reflects the general competencies that any graduate from the College of Engineering should have gained.
- Level B: This level reflects the general specialized competencies that any graduate in the field of electrical engineering should possess.
- Level C: This level reflects the specialized competencies that a graduate of the electrical power and machines engineering program should acquire.

5.1 Competencies of Engineering Graduate (Level A)

The Engineering Graduate must be able to:

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.
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.
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.
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.
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.

5.2 Competencies of Electrical Engineering Graduate (Level B)

In addition to the Competencies for All Engineering Programs the basic Electrical Engineering graduate must be able to:

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.
B3.	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
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.

5.3 Competencies of Electrical Power and Machines Engineering Graduate (Level C)

In addition to the competences for all Engineering Programs (A-Level) and the competencies for the Electrical Engineering Discipline (B-Level), the Electrical Power and Machines Engineering Program graduate must be able to:

C1.	Identify and formulate engineering problems to solve problems in power system, power electronics, electrical machines and high voltages.
C2.	Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines.
C3.	Specify and evaluate manufacturing of components and equipment related to electrical power and machines.
C4.	Test and examine components, equipment and system of electrical power and machines.
C5.	Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer-controlled systems.
C6.	Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.

6. Benchmarks and Academic Reference Standards

The external references for standards considered in the development of this program were the National Academic Reference Standards for Engineering (NARS 2018) and for Electrical Engineering graduate.

7. The Academic Reference and Program Aims

Table (2) explains how the competencies of the current program achieve the program aims:

Table (2): The Relation Between Program Aims and Academic Reference

		Academic Reference																			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6
Program Aims	1	*	*																			
	2	*								*							*					
	3						*	*	*													
	4					*					*											
	5				*									*								*
	6			*									*	*		*						
	7											*						*			*	
	8														*							*
	9												*	*		*			*	*	*	

8. Learning Outcomes:

The program learning outcomes are divided into three domains cognitive, psychomotor and affective:

1. Cognitive Domain:

A1.1 Identify and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.

A2.1 Analyze and interpret data, assess and evaluate findings to draw conclusions

A3.1 Formulate a design process to meet specified needs.

A4.1 Identify technologies, codes of practice and standards related to the discipline.

A5.1 Investigate research techniques and methods of investigation.

A6.1 Plan the implementation of engineering projects taking into consideration other trades requirements.

A7.1 Identify his/her role as an individual and as a member of multi-disciplinary and multi-cultural teams.

A8.1 Recognize methods of communications (verbally/written) with a range of audiences using contemporary tools.

A9.1 Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations

A10.1 Acquire new knowledge using and self-practice lifelong and other learning strategies.

B1.1 Choose and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.

B2.1 Design and analyze an electrical/electronic/digital system or component for

a specific application; and identify the tools required to optimize this design.

B3.1 Design elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.

B4.1 Estimate the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.

B5.1 Choose suitable national and international standards and codes to: design, build, operate,

inspect and maintain electrical/electronic/digital equipment, systems and services.

C1.1 Identify and formulate engineering problems in the field of power system, power electronics, electrical machines and high voltages.

C2.2 Investigate design problems and interpret numerical data related to electrical power systems and machines.

C3.1 Evaluate manufacturing of components and equipment related to electrical power and machines.

C4.1 Examine components, equipment and system of electrical power and machines.

C5.1 Design computer-controlled systems including electrical, electronic and mechanical components and equipment with transducers, actuators and controllers

C6.1 Utilize modern techniques, skills and engineering tools to electrical power and machines engineering systems.

2. Psychomotor Domain:

A1.2 Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics and on basis of limited or contradicting information.

A2.2 Develop and conduct appropriate experimentation and/or simulation and use statistical analyses and objective engineering judgment to draw conclusions.

A3.2 Apply engineering design processes and knowledge of mathematics, science, information technology, to produce cost-effective solutions that meet specified needs and to solve engineering problems.

A4.2 Utilize and incorporate contemporary technologies, codes of practice and standards related to the discipline economic, societal, environmental dimensions and risk management in design.

A5.2 Practice research techniques and methods of investigation.

A6.2 Supervise, monitor and Judge engineering decisions, implementation of engineering projects taking into consideration other trades requirements, costs, benefits, safety, quality, reliability, and environmental impact.

A7.2 Perform efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.

A8.2 Communicate (verbally/written) and Exchange knowledge and skills with a range of audiences using contemporary tools with engineering community and industry.

A9.2 Apply entrepreneurial and leadership skills to anticipate and respond to new situations.

A10.2 Apply new knowledge; and practice self, lifelong and other learning strategies.

B 1.2 Model electrical power systems by applying the concepts of generation, transmission, and distribution of electrical power systems.

B2.2 Model an electrical/electronic/digital system and develop the tools to optimize this design.

B3.2 Implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.

B4.2 Measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and show its suitability for a specific application.

B5.2 Build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services following suitable national and international standards and codes.

C1.2 Troubleshoot engineering problems in the field of power system, power electronics, electrical machines and high voltages.

C2.2 Test and Examine components, equipment and systems in electrical power systems

C3.2 Identify components and equipment related to electrical power and machines.

C4.2 Test components, equipment and system of electrical power and machines.

C5.2 Build computer-controlled systems including electrical, electronic and mechanical components and equipment with transducers, actuators and controllers.

C6.2 Practice modern techniques, skills, and engineering tools to electrical power and machines engineering systems.

3. Affective Domain:

A1.3 Acknowledge the importance of engineering fundamentals, basic science and mathematics in solving complex engineering Problems.

A2.3 Praise critical thinking to draw conclusions.

A3.3 Consider social, environmental, ethical and other aspects while applying a design process to achieve solutions.

A4.3 Follow quality guidelines, health and safety requirements, environmental issues and risk management principles.

A5.3 Adopt researching techniques and methods of investigation as an inherent part of learning.

A6.3 Encourage the staff and facilitate the required needs

A7.3 Express appreciation for the contributions of all team members

A8.3 Follow communications ethics guided by community morals and values.

A9.3 Act effectively under difficult and new situation.

A10.3 Adopt learning strategies as an effective lifelong learning strategy.

B1.3 Respect and follow adopted national/international specifications to select the suitable electrical powers system.

B2.3 Seek optimization techniques in the design process electrical/electronic/digital system or component.

B3.3 Recommend using technological and professional tools in the design and implementation of electrical/electronic/digital engineering.

B4.3 Empathize the important of measuring, testing and commissioning any electrical/electronic/digital system equipment before usage.

B5.3 Adopt suitable national and international standards and codes while design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems.

C1.3 Acknowledge the importance of power system, power electronics, electrical machines and high voltages.

C2.3 Follow analytical thinking while dealing with electrical power systems design problems

C3.3 Recommend components and equipment related to electrical power and machines.

C4.3 Respect related precautions and procedures while conduction various tests on components and equipment of electrical power and machines.

C5.3 Arrange work while dealing with computer-controlled systems including electrical, electronic and mechanical components and equipment with transducers, actuators and controllers

C6.3 Value modern techniques, skills and engineering tools to electrical power and machines engineering systems

9. Program Structure

Program Duration: **9 Semester**

Program Structure

Program Hours: **144 Hrs.** **Compulsory hours:** **129 Hrs.**

Elective hours: **15 Hrs.**

Table (3): Courses Classification According to reference framework for preparing study programs

	Minimum %	Maximum%
Academy Requirements	**8%**	**--**
Engineering Major	**20%**	**--**
General Electrical Requirement	**35%**	**--**
Minor (Electrical Power and Machines) Requirements	**---**	**30%**

- **Academy Requirements Study Plan**

The Academy requirements study plan contains 15 mandatory credits and 3 elective credits. All Academy students must take the 15 mandatory credits. Each student can choose 3 elective credits from the available elective course list. The Academy council assigns a committee for each course to develop its specs, and to follow up its reports and files according to the academy internal quality assurance system.

- Mandatory Courses

Code	Course Title	Cr.	Lec	Ex	Lab
ENG 0101	English Language	3	2	2	0
ARA 0102	Arabic Language	3	3	0	0
HUR 0110	Human Rights	3	3	0	0
COM 0200	Computer Skills	3	2	0	2
EGY 0300	Egyptology	3	3	0	0
Total		15 Cred			

- Elective Courses

Code	Course Title	Cr.	Lec	Ex	Lab
BUS 0310	Business Administration Fundamentals	3	3	0	0
PSY 0320	Thinking Philosophy	3	3	0	0
EGY 0330	Egyptian History	3	3	0	0
MDA 0400	Media Ethics	3	3	0	0
MDA 0410	Media and Politics	3	3	0	0
MDA 0420	Media and Society	3	3	0	0
RTV 0430	International Media	3	3	0	0
ART 0500	Basics of Arts	3	3	0	0

➢ Engineering Major

The Major requirements study plan contains mandatory courses. These courses represent the essential and general scientific background for all students in the Major to help them choose the suitable academic program. The following are the data of the Major requirements courses.

- Mandatory Courses

Code	Course Title	Cr.	Lec	Ex	Lab
BAS 2102	Mathematics 1	3	2	2	0
BAS 2103	Physics 1	3	2	1	2
BAS 2104	Mechanics	3	2	2	0
MED 2105	Engineering Drawing	3	1	4	0
MED 2106	History of Engineering & Tech	3	2	2	0
MED 2107	Technical Workshop	3	1	2	2
BAS 2110	Mathematics 2	3	2	2	0
BAS 2111	Physics 2	3	2	1	2
BAS 2112	Engineering Chemistry	3	2	1	2
BAS 2123	Statistics & Probability Theory	3	2	2	0

- Elective Courses

Code	Course Title	Cr.	Lec	Ex	Lab
CAI 2601	Principles of Computer Engin	3	2	0	2
ELE 2531	Principles of Mechatronics	3	2	2	0
ARC 2532	Principles of Architecture Eng	3	2	2	0
ELE 2533	Principles of Electronic Engin	3	2	2	0
CEN 2366	Principles of Civil Engineering	3	2	2	0
ELP 2444	Principles of Electrical Engine	3	2	2	0

➢ Major (Electrical Engineering) Requirement

Major (Electrical Engineering) requirements courses which represent 51 credit hours representing 35% of the degree requirements

Code	Course Title	Cr.	Lec	Ex	Lab
BAS 2115	Mathematics 3	3	2	2	0
ELP 2403	Electrical Circuits 1	3	2	1	2
ELP 2404	Electrical Measurements & Testing	3	2	1	2
ELP 2409	Electrical Materials	3	2	2	0
ELE 2504	Electromagnetic Fields	3	2	2	0
ELP 2406	Electrical Circuits 2	3	2	1	2
ELE 2511	Logic Design 1	3	2	1	2
CAI 2509	Computer Programming	3	1	2	2
ELE 2512	Microprocessor & Applications	3	2	1	2
CAI 2401	Automatic Control	3	2	1	2
ELE 2514	Signal Analysis	3	2	2	0
ELE 2519	Electronics	3	2	1	2
CAI 2520	Computer Organization & Arch.	3	2	1	2
BAS 2118	Mathematics 4	3	2	2	0
ELP 2433	Technology of renewable energy	3	2	2	1
CAI 2603	Artificial Intelligence 1	3	2	1	1
ELP 2410	Electrical Machine 1	3	2	1	2
Total		51 credit			

➢ Minor (Electrical Power and Machines) Requirements

- Mandatory Courses

Code	Course Title	Cr.	Lec	Ex	Lab
ELP 2412	Electrical Installations	3	2	2	0
ELP 2413	Electrical Power Systems	3	2	1	2
ELP 2419	High Voltage Engineering	3	2	1	2
ELP 2414	Power System Analysis 1	3	2	1	2
ELP 2418	Power Electronics	3	2	1	1
ELP 2420	PLC	3	2	1	2
ELP 2460	Graduation Project	3	0	0	6
ELP 2430	Electrical Drive Systems	3	2	1	2
ELP 2411	Electrical Machines 2	3	2	0	2
ELP 2426	Electrical Protection systems	3	2	1	2
ELP 2416	Field Training	3	0	0	6
Total		31 Credit			

- Elective Course (Select 9 credit hours)

Code	Course Title	Cr.	Lec	Ex	Lab
ELP 2424	**Electrical Power System Analysis 2**	**3**	**2**	**1**	**2**
ELP 2423	**Computer Control in Electrical Power systems**	**3**	**2**	**1**	**1**
ELP 2402	**Digital Control Systems**	**3**	**2**	**1**	**2**
ELP 2429	**Energy Utilization in Buildings and Manufacture**	**3**	**2**	**1**	**2**
ELP 2415	**Microcontroller & Applications**	**3**	**2**	**1**	**2**
ELP 2421	**Power Electronics Applications**	**3**	**2**	**1**	**2**
ELP 2422	**Special Electrical Machines**	**3**	**2**	**1**	**2**
CAI 2624	**Robotics Design**	**3**	**2**	**1**	**4**

10. Suggested Study Plan for Electrical Power and Machines Engineering Program

Preparatory (1st Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)						Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	Total	
BAS 2102	Mathematics (1)	2	2	-	4	25	25	10	0	40	100	3
BAS2104	Mechanics	2	2	-	4	25	25	10	0	40	100	3
BAS 2103	Physics (1)	2	1	2	5	15	15	10	20	40	100	3
MED 2105	Engineering Drawing	1	-	4	5	15	15	10	20	40	100	3
ARA 0102	Arabic Language	3	-	-	3	25	25	10	0	40	100	3
MED 2106	History of Engineering & Technology	2	2	-	4	25	25	10	0	40	100	3
Total		**12**	**7**	**6**	**25**						**600**	

Preparatory (2nd Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)						Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	Total	
BAS 2110	Mathematics (2)	2	2	-	4	25	25	10	0	40	100	3
BAS 2112	Engineering Chemistry	2	1	2	5	15	15	10	0	40	100	3
BAS 2111	Physics (2)	2	1	2	5	15	15	10	20	40	100	3
MED 2107	Technical Workshop	1	2	2	5	15	15	10	20	40	100	3
ENG 0101	English Language	3	-	-	3	25	25	10	0	40	100	3
COM 0200	Computer Skills	2	-	2	4	15	15	10	20	40	100	3
Total		**12**	**6**	**8**	**26**						**600**	

First Year (1st Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)						Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	Total	
BAS 2115	Mathematics 3	2	2	-	4	25	25	10	0	40	100	3
HUR 0110	Human Rights	3	-	-	3	25	25	10	0	40	100	3
ELP 2403	Electrical Circuits 1	2	1	2	5	15	15	10	20	40	100	3
ELP 2404	Electrical Measurements &Testing	2	1	2	5	15	15	10	20	40	100	3
ELE 2504	Electromagnetic Fields	2	2	-	4	25	25	10	0	40	100	3
Total		**11**	**6**	**4**	**21**						**500**	

First Year (2nd Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)						Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	Total	
EGY 0300	Egyptology	3	-	-	3	25	25	10	0	40	100	3
-------	Engineering Major Elective Course	2	---	--	--	15	15	10	20	40	100	3
BAS 2123	Statistics & Probability Theory	2	2	-	4	25	25	10	0	40	100	3
ELP 2406	Electrical Circuits 2	2	1	2	5	15	15	10	20	40	100	3
ELP 2409	Electrical Materials	2	2	-	4	25	25	10	0	40	100	3
Total		**11**	**5**	**2**	**16**						**500**	

Second Year (1st Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)						Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	Total	
	Academy Elective	3	-	-	3	25	25	10	0	40	100	3
ELE 2511	Logic Design 1	2	1	2	5	15	15	10	20	40	100	3
CAI 2509	Computer Programming	1	2	2	5	15	15	10	20	40	100	3
ELP 2433	Technology of Renewable Energy	2	1	2	5	15	15	10	20	40	100	3
ELE 2519	Electronics	2	1	2	5	15	15	10	20	40	100	3
Total		**10**	**5**	**8**	**23**						**500**	

Second Year (2nd Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)						Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	Total	
ELP 2410	Electrical Machine 1	2	1	2	5	15	15	10	20	40	100	3
ELE 2512	Microprocessor & Applications	2	1	2	5	15	15	10	20	40	100	3
CAI 2401	Automatic Control	2	1	2	5	15	15	10	20	40	100	3
BAS 2118	Mathematics 4	2	2	-	4	25	25	10	0	40	100	3
CAI 2520	Computer Organization & Arch	2	1	2	5	15	15	10	20	40	100	3
Total		**10**	**6**	**8**	**24**						**500**	

Third Year (1st Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)						Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	Total	
ELE 2514	Signal Analysis	2	2	-	4	25	25	10	0	40	100	3
ELP 2411	Electrical Machines 2	2	1	2	5	15	15	10	20	40	100	3
ELP 2413	Electrical Power Systems	2	1	2	5	15	15	10	20	40	100	3
ELP 2418	Power Electronics	2	1	1	4	15	15	10	20	40	100	3
ELP 2419	High Voltage Engineering	2	1	2	5	15	15	10	20	40	100	3
Total		**10**	**6**	**7**	**23**						**500**	

Third Year (2nd Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)							Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	WS	Total	
ELP 2412	Electrical Installations	2	2	-	4	25	25	10	0	40	0	100	3
ELP 2414	Power System Analysis 1	2	1	2	5	15	15	10	20	40	0	100	3
ELP 2416	Field Training	-	-	-	-	-	-	-	-	-	6	-	-
CAI 2603	Artificial Intelligence 1	2	1	1	4	15	15	10	20	40	0	100	3
-----	Electrical Power Elective (1)	2	1	2	5	15	15	10	20	40	0	100	3
Total		**8**	**5**	**5**	**18**							**600**	

Fourth Year (1st Semester)

Course Code	Course Title	Weekly Hours				Grading (Marks)						Final Exam Time
		Lecture	Tutorial	Practical Application (Lab)	Total	Midterm Exam	Quizzes	Punctuality and Participation	Oral or Practical Test	Final Exam	Total	
ELP 2460	Graduation Project	-	-	6	6				100		100	3
ELP 2430	Electrical Drive Systems	2	1	2	5	15	15	10	20	40	100	3
ELP 2420	PLC	2	1	2	5	15	15	10	20	40	100	3
ELP 2426	Electrical Protection Systems	2	1	2	5	15	15	10	20	40	100	3
-----	Electrical Power Elective (2)	2				15	15	10	20	40	100	3
-----	Electrical Power Elective (3)	2				15	15	10	20	40	100	3
Total		**10**	**3**	**12**	**30**						**600**	

11. Program Admission Requirements:

The Academy fully complies with the admission regulations of the Private Institutions of the Ministry of Higher Education. Students applying for admission at an Academy Major must meet the following requirements:

1- Should be Egyptian. Non-Egyptian students can also accepted according to the related rules organized by the ministry of higher education.

2- Must graduate from the general secondary school or equivalent. Students join Majors through a competitive process, based mainly on the results of the secondary school Final Exam (Thanaweya Amma).

3- Should pass the Admission Exam.

4- Should be healthy.

5- Must enroll as a full-time student.

6- All kinds of required fees must paid in full

12. Regulations for progression and program completion:

- The minimum number of credit hours required for graduation is 144 Cr. These credits distributed among the academy requirements, the major requirement and the program requirements.
- The student is responsible for the study load that is adequate to his/her abilities and study level. The Academic Advisor examines the student's records to advise him/her to take a number of courses appropriate to his academic achievement at the Major with consideration to the following:

1. The maximum number of credit hours is 18 per week during the fall and spring semesters. This number of credit hours may however reach 21 if the Student‟s GPA is 3 or more. This may change if the student expected to graduate in the semester and advised by the student's academic advisor.

2. The minimum number of credit hours is 12 per week during the fall and spring semesters except for graduating students where the student can register for a number of credit hours less than 12 depending on the remaining credit hours in his/her last semester.

3. In the summer semester, the maximum number of credit hours is 6. This number may be increased to 9 credits if this will allow the student to be graduated. Each course group should not be less than 10 students.

4. The Major council must approve other cases of violating the maximum and minimum limits.

- The applied study system allows the students to complete their study program in the minimum time (4 years). However, the following restrictions should consider:

1. The maximum period of the study program is 16 main semesters, including the withdrawn semesters without counting the summer semesters.

2. The Academy council may allow a student to exceed these maximum specified periods in justifiable cases subject to a recommendation from the Major council.

The Grades of Success:

Table (4) shows the program grades of success.

Table (4): The Grades of Success

Symbol	Points	Percentage
A+	4.0	more than 97%
A	4.0	More than 93% and less than 97%
A-	3.7	More than 89% and less than 93%
B+	3.3	More than 84% and less than 89%
B	3.0	More than 80% and less than 84%
B-	2.7	More than 76% and less than 80%
C+	2.3	More than 73% and less than 76%
C	2.0	More than 70% and less than 73%
C-	1.7	More than 67% and less than 70%
D+	1.3	More than 64% and less than 67%
D	1.0	More than 60% and less than 64%
F	0.0	Less than 60%

13. Assessment Methods:

Table (5) illustrates how the program assessment methods achieve the program competencies.

Table (5): The Relation Between Program Competencies and Assessment Methods

		Assessment Methods							
		Written Exam	Oral Exam	Quizzes	Lab Exam	Research Assignments	Reporting Assignments	Project Assignment	In-Class Questions
Program Competencies	A1	*		*		*	*		*
	A2		*		*	*	*		*
	A3	*		*			*	*	
	A4	*		*			*		
	A5					*			*
	A6				*	*	*	*	*
	A7					*	*	*	
	A8		*			*	*	*	
	A9		*			*	*		
	A10						*	*	*
	B1	*	*	*		*	*		
	B2	*		*	*	*	*		
	B3	*	*	*		*	*		
	B4	*		*	*	*	*		
	B5	*		*		*	*		
	C1	*		*			*		
	C2	*			*		*		
	C3	*			*		*		
	C4	*			*		*		
	C5				*		*		
	C6				*		*		

14. Teaching and Learning Methods:

Table (6) clarify the relation between program teaching & learning methods and the program competencies

Table (6): The Relation Between Program Competencies and Teaching & Learning Methods

		Teaching and Learning Methods									
		Face-to-face Lecture	Online Education	Tutorial / Exercise	Group Discussions	Laboratory	Site Visit	Presentation	Mini Project	Research and Reporting	Brain Storming
Program Competencies	A1	*	*	*							
	A2				*	*			*	*	
	A3	*	*	*							*
	A4	*	*	*			*				
	A5									*	*
	A6				*	*	*		*		
	A7							*		*	*
	A8				*			*			
	A9				*			*		*	
	A10				*					*	*
	B1	*	*	*						*	*
	B2	*	*	*					*		
	B3	*	*	*		*		*			
	B4	*	*	*					*		
	B5	*	*	*			*				
	C1	*	*	*						*	
	C2	*	*			*			*		
	C3	*	*			*			*		
	C4	*	*			*			*		
	C5	*	*			*			*		
	C6	*	*			*			*		

15. Evaluation of program learning outcomes

Evaluator	Tool	Sample
1- Senior students	Meeting+ questioner	20%
2- Alumni	questioner	20%
3- Stakeholders (Employers)	Site visits	NA
4-External Evaluator, and/or, External Examiner(s)	External members	NA
5- Others		NA

Program Coordinator: Dr. Moustafa Hassan
Signature:

Date: 10/2023

Division Dean: Prof. Dr. Said M. El-Halafawy
Signature:

Date: 10/2023