MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

UNDERGRADUATE PROGRAM

Level of education:	**Undergraduate**
Major:	**Electrical engineering**
Code:	**7520201**
Type of education:	**Full-time**

Gia Lai, 2025

MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

(Issued together with Decision No. 2094/QĐ-ĐHQN dated July 22, 2025 of the Rector of Quy Nhon University)

Level of education: **Undergraduate**
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1. PROGRAM OBJECTIVES

1.1. General objectives

The undergraduate training programme in Electrical Engineering aims to equip learners with professional knowledge and skills, practical competencies, digital capabilities, and innovation; political qualities, professional ethics, and good health; the ability for lifelong learning; professional responsibility and a sense of community service; as well as the ability to work independently and in teams, adapting to changes in an internationally integrated environment.

1.2. Specific objectives (POs)

After graduation, learners will:

+ PO1: Possess professional knowledge, skills, and practical expertise in the field of electrical engineering that meet the demands of an internationally integrated environment.

+ PO2: Demonstrate critical thinking, proactively collaborate, and address issues at the organizational, local, national, and regional levels.

+ PO3: Have the ability for self-learning, entrepreneurial thinking, innovation, and digital competence to adapt to changes in a multidisciplinary work environment.

+ PO4: Exhibit ethics, professional responsibility, and a sense of community service.

2. EMPLOYMENT OPPORTUNITIES AND FURTHER STUDY PROSPECTS

Graduates of the Electrical Engineering program are qualified to work in the following positions and organizations:

- Power companies, substations, hydropower plants, thermal power plants, wind power plants, and solar power plants, serving as operators, technical managers, or technical coordinators;

- Consulting firms specializing in the design, construction, installation, operation, testing, and maintenance of electrical equipment and power systems;

- Regulatory agencies in the fields of electrical engineering and automation; energy auditing agencies; electricity trading and power business companies; and enterprises engaged in the manufacturing of electrical equipment;

- Industrial manufacturing companies, automated production plants, production lines, and industrial zones;

- Companies involved in the manufacturing and assembly of electrical and electronic equipment, as well as elevator and conveyor manufacturing companies;

- Enterprises, manufacturing companies, and commercial centers in roles related to the management and operation of electrical and lighting systems;

- Establishing and managing their own businesses in the electrical engineering sector, including M&E consulting and design companies, and companies trading electrical and electronic components and equipment;

- Teaching and conducting research at research institutes, universities, colleges, and vocational institutions in the field of Electrical Engineering and Automation; graduates may also pursue Master's and Doctoral degrees domestically or internationally.

3. PROGRAM LEARNING OUTCOMES (PLOS)

The learning outcomes of the Electrical Engineering programme ensure that graduates will be able to:

1) PLO1. Apply general education knowledge and entrepreneurial thinking to identify social issues.
2) PLO2. Apply fundamental scientific knowledge to analyze and solve problems in the field of electrical engineering.
3) PLO3. Select electrical equipment and apparatus in accordance with technical requirements to ensure safe and efficient operation.
4) PLO4. Design power supply systems and automated control systems that meet technical and economic requirements.
5) PLO5. Evaluate the operational efficiency of components in the power system through simulation and experimentation.
6) PLO6. Develop self-learning skills, discipline, and professional responsibility to meet job requirements in electrical engineering.
7) PLO7. Apply digital competencies in work, adapting to technological development trends and integration environments.

4. PROGRAM DURATION AND TOTAL CREDITS

4.1. Program Duration: 4.5 years

4.2. Total credits: 150 credits (Excluding 03 credits of Physical Education and 09 credits of National Defense–Security Education)

No.	Program structure	Credits	
		Compulsory	Elective
1	**General Knowledge**	**24**	**0**
1.1	Political Science and Law	13	0
1.2	Foreign Languages	7	0
1.3	Social Sciences	4	0
2	**Professional Knowledge**	**122**	**4**
2.1	Fundamental knowledge	66	0
2.2	Specialized knowledge	40	4
2.3	Internship	8	0
2.4	Graduation thesis	8	0
Total:		**146**	**4**
		150	

5. ADMISSION REQUIREMENTS

Admission requirements according to the current Admissions Regulations of Quy Nhon University.

6. TRAINING METHOD, GRADUATION REQUIREMENTS

6.1. Training Method: Delivered under the credit-based system.

6.2. Graduation Requirements: (professional knowledge, prerequisite courses, foreign language requirements, and information technology requirements)

- Accumulate all required courses and complete the total credit requirements of the academic program;

- Achieve a cumulative Grade Point Average (GPA) of at least 2.00 for the entire course of study;

- Complete the Physical Education courses and obtain a certificate of National Defense and Security Education;

- Meet the foreign language and information technology proficiency requirements in accordance with the University's regulations;

- Fulfill all Program Learning Outcomes (PLOs) of the academic program.

7. TEACHING METHODS AND LEARNING ASSESSMENT

7.1. Teaching Methods

- Lecturer Preparation

Lecturers teaching the Electrical Engineering program are required to be equipped with diverse teaching experiences and competencies:

- Clearly understand the type of class they are teaching (theoretical classes, practical sessions, laboratory work, compulsory courses, elective courses, course projects, or graduation thesis projects);
- Clearly understand the teaching approach (interdisciplinary teaching, integrated teaching);
- Thoroughly understand their students (first-year, second-year, third-year, fourth-year, or final-year students);
- Have a clear understanding of academic policies and regulations;
- Carefully prepare textbooks, lecture notes, exercise books, detailed course syllabi, presentation slides, instructional materials and teaching aids, teaching schedules, and lesson plans.

- Teaching – Learning Methods:

Depending on the teaching strategy of each course, the corresponding teaching methods may include the following:

1. Direct teching: Most theoretical courses are delivered through lectures, presentations, questioning, guided inquiry, assigning homework, and assessing students' self-study ability through exercises and discussions. The corresponding teaching methods include:
    - ✓ Lecturing
    - ✓ Guided questioning
    - ✓ Discussion
2. Indirect teching: Some courses are delivered indirectly, with no explicit or continuous intervention from the lecturer, such as course projects and graduation thesis projects. The corresponding teaching methods include:
    - ✓ Open-ended questioning
    - ✓ Idea development
    - ✓ Case study
    - ✓ Problem-solving
3. Experiential Learning: Courses in the curriculum are designed to incorporate experiential learning, such as practical and laboratory courses conducted in the university's laboratories; professional internships and graduation internships at enterprises; course design projects and graduation design projects. The corresponding teaching methods include:
    - ✓ Modeling
    - ✓ Internship and fieldwork

- ✓ Experimentation
- ✓ Design

4. Interactive Teaching: This approach is implemented in several courses within the curriculum. Students engage in group assignments, group presentations, laboratory experiments, group practical sessions, industrial internships, field visits, and graduation projects. The corresponding teaching methods include:
   - ✓ Discussion
   - ✓ Problem-solving
   - ✓ Collaborative learning
   - ✓ Interaction and feedback
5. Independent Learning: This includes experimental and design activities in course projects and graduation projects; presenting course projects and graduation theses; completing homework assignments; writing laboratory reports; presenting experimental results; and self-directed study. The corresponding teaching methods include:
   - ✓ Individual task assignment
   - ✓ Research projects and design projects
   - ✓ Computer-based instruction
   - ✓ Reflection

7.2. Learning Assessment

Pursuant to the current Regulations on Full-time Undergraduate and College Education delivered under the credit-based system of Quy Nhon University.

8. PROGRAM CONTENT

No	Code	Course	Semester	No of credicts	Knowledge block	Type of course			Studying activities						Condition		Department responsible for course
						Mandatory	Compulsory Electives	Free Electives	Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
I. General Education Knowledge Block				**24**													
Mandatory																	
I.1. Political Science and Law				***13***													
1	1130299	Philosophy of Marx – Lenin	2	3	1	x			40		10			95			DPESM
2	1130049	Fundamental of Law	2	2	1	x			27		6			62			DPESM
3	1130300	Political Economy of Marx – Lenin	3	2	1	x			27		6			62		1130299	DPESM
4	1130301	Scientific Socialism	4	2	1	x			27		6			62		1130300	DPESM
5	1130302	History of the Communist Party of Vietnam	5	2	1	x			27		6			62		1130301	DPESM
6	1130091	Ho Chi Minh's Ideology	6	2	1	x			27		6			62		1130302	DPESM
I.2. Physical Education and National Defense– Security Education (12 credicts)																	
I.2.1. Physical Education: Choose one of the two following courses:																	
7	1120172	Physical Education 1 (Football 1)	1	1					4			26		15			DPE
8	1120173	Physical Education 2 (Football 2)	2	1					4			26		15		1120172	DPE
9	1120174	Physical Education 3 (Football 3)	3	1					4			26		15		1120173	DPE
10	1120175	Physical Education 1 (Volleyball 1)	1	1					4			26		15			DPE
11	1120176	Physical Education 2 (Volleyball 2)	2	1					4			26		15		1120175	DPE
12	1120177	Physical Education 3 (Volleyball 3)	3	1					4			26		15		1120176	DPE

No	Code	Course	Semester	No of credicts	Knowledge block	Type of course			Studying activities						Condition		Department responsible for course
						Mandatory	Compulsory Electives	Free Electives	Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
13	1120178	Physical Education 1 (Basketball 1)	1	1					4			26		15			DPE
14	1120179	Physical Education 2 (Basketball 2)	2	1					4			26		15		1120178	DPE
15	1120180	Physical Education 3 (Basketball 3)	3	1					4			26		15		1120179	DPE
16	1120181	Physical Education 1 (Badminton 1)	1	1					4			26		15			DPE
17	1120182	Physical Education 2 (Badminton 2)	2	1					4			26		15		1120181	DPE
18	1120183	Physical Education 3 (Badminton 3)	3	1					4			26		15		1120182	DPE
19	1120184	Physical Education 1 (Vietnamese traditional martial arts 1)	1	1					4			26		15			DPE
20	1120185	Physical Education 2 (Vietnamese traditional martial arts 2)	2	1					4			26		15		1120184	DPE
21	1120186	Physical Education 3 (Vietnamese traditional martial arts 3)	3	1					4			26		15		1120185	DPE
22	1120187	Physical Education 1 (Taekwondo martial arts 1)	1	1					4			26		15			DPE
23	1120188	Physical Education 2 (Taekwondo martial arts 2)	2	1					4			26		15		1120187	DPE
24	1120189	Physical Education 3	3	1					4			26		15		1120188	DPE

No	Code	Course	Semester	No of credicts	Knowledge block	Type of course			Studying activities						Condition		Department responsible for course
						Mandatory	Compulsory Electives	Free Electives	Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
		(Taekwondo martial arts 3)															
25	1120190	Physical Education 1 (Taekwondo martial arts 1)	1	1					4			26		15			DPE
26	1120191	Physical Education 2 (Karatedo martial arts 2)	2	1					4			26		15		112019 0	DPE
27	1120192	Physical Education 3 (Karatedo martial arts 3)	3	1					4			26		15		112019 1	DPE
28	1120239	Physical Education 1 (Pickleball 1)	1	1					4			26		15			DPE
29	1120240	Physical Education 2 (Pickleball 2)	2	1					4			26		15		112023 9	DPE
30	1120241	Physical Education 3 (Pickleball 3)	3	1					4			26		15		112024 0	DPE
I.2.2. National Defense–Security Education																	
31	1120168	National Defense–Security Education 1	4	3					37		16			92			CNDSE
32	1120169	National Defense–Security Education 2	4	2					22		16			57			CNDSE
33	1120170	National Defense–Security Education 3	4	2					14			32		49			CNDSE
34	1120171	National Defense–Security Education 4	4	2					18			56		21			CNDSE
I.3. Foreign languages				*7*													
35	1090061	English 1	1	3	1	x			30	15				100			DFL

No	Code	Course	Semester	No of credicts	Knowledge block	Type of course			Studying activities						Condition		Department responsible for course
						Mandatory	Compulsory Electives	Free Electives	Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
36	1090166	English 2	2	4	1	x			40	20				135		1090061	DFL
I.4. Social Sciences				***4***													
37	2030003	Communication Skills	1	2	1	x			18		4	20		53			DSSH
38	1150422	Entrepreneurship	6	2	1	x			20		5	10	60	60			DFBA
II. Professional Education Knowledge Block				**110**													
II.1. Foundational and core knowledge				***66***													
39	1010354	Linear Algebra	1	3	2	x			30	15				100			DMS
40	1010052	Calculus 1	1	3	2	x			34	11				100			DMS
41	1020162	Physics 1	1	2	2	x			28		4			63			DNS
42	1160330	Descriptive Geometry and Technical Drawing	1	3	2	x			30	15				100			DET
43	1160490	Fundamentals of Informatics (Engineering)	2	3	2	x			30			30		85			DET
44	1010059	Calculus 2	2	3	2	x			36	9				100		1010052	DMS
45	1020163	Physics 2	2	2	2	x			24	4	4			63		1020162	DNS
46	1020164	Physics Laboratory	2	1	2	x						30		15		1020162	DNS
47	1010129	Probability and Statistics	3	2	2	x			27	3				65		1010354	DMS
48	1010098	Numerical Methods	3	2	2	x			24	6				65		1010052	DMS
49	1160114	Engineering Mathematics	3	2	2	x			22	8				65		1010059 1010354	DET
50	1160005	Thermal Engineering	3	2	3	x			22	8				65		1020163	DET
51	1160375	Applied Hydraulics	3	2	3	x			24	6				65		1010354 1020163	DET
52	1160408	Programming techniques	3	2	3	x			16	4		20		55		1160490	DET

No	Code	Course	Semester	No of credicts	Knowledge block	Type of course			Studying activities						Condition		Department responsible for course
						Mandatory	Compulsory Electives	Free Electives	Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
53	1160009	Electric circuit theory 1	3	3	3	x			29	16				100		10201 63	DET
54	1160407	Analog and Digital Electronic Circuits	4	2	3	x			20	10				65		10201 63	DET
55	1160545	Electric circuit theory 2	4	3	3	x			29	16				100		11600 09	DET
56	1160228	Electric circuit theory laboratory	4	1	3	x						30		15		11600 09	DET
57	1160022	Electric machines 1	4	3	3	x			32	13				100			DET
58	1160412	Automatic Control Theory	4	2	3	x			23	7				65		11601 14	DET
59	1160413	Measurement engineering	4	2	3	x			22	8				65		11600 09	DET
60	1160654	Electrical safety	4	2	3	x			30					65		11600 09	DET
61	1160377	English for electrical engineering	5	2	3	x			30					65		11600 22 11600 27	DET
62	1160013	Electrical Materials	5	2	3	x			30					65		11606 54	DET
63	1160034	Electric machines 2	5	3	3	x			32	13				100		11600 22	DET
64	1160232	Electric machines laboratory	5	1	3	x						30		15		11600 22	DET
65	1160817	Measurement engineering and Electronic Circuits Laboratory	5	1	3	x						30		15			DET
66	1160028	Power electronics	5	3	3	x			40	5				100		11604 07	DET
67	1160027	Electrical Instruments	5	3	3	x			42	3				100		11600 34	DET
68	1160819	Power electronics laboratory	6	1	3	x						30		15		11600 28	DET
II.2. Major and specialized knowledge				***44***													

No	Code	Course	Semester	No of credicts	Knowledge block	Type of course			Studying activities						Condition		Department responsible for course
						Mandatory	Compulsory Electives	Free Electives	Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
II.2.1. Mandatory				***40***													
69	1160818	Electrical and electronic engineering practice	5	1	3	x						30				11600 34	DET
70	1160032	Electrical Drives	6	3	4	x			37	8				100		11600 34	DET
71	1160546	Power network	6	3	4	x			35	10				100		11600 34	DET
72	1160657	Microcontrollers	6	2	4	x			30					65			DET
73	1160420	Electrical Equipment Project	6	1	4	x							ĐA	45		11600 34 11600 27	DET
74	1160591	Short-circuit in power systems	6	2	4	x			22	8				65		11600 34	DET
75	1160393	Electrical apparatus	6	2	4	x			30					65		11600 34 11600 28	DET
76	1160660	Electrical apparatus practice	7	1	4	x						30		15		11603 93	DET
77	1160646	Logic Control and PLC	7	2	4	x			20	10				65		11600 27 11603 93	DET
78	1160658	Microcontrollers Practice	7	1	4	x						30		15			DET
79	1160594	Industrial Communication Networks and SCADA	7	2	4	x			30					65			DET
80	1160592	High voltage engineering	7	3	4	x			37	8				100		10201 63 11602 82	DET
81	1160423	Electric components in Power plant and Substation	7	3	4	x			30	15				100		11605 46	DET
82	1160341	Smart grid	7	2	4	x			24	6				65		11605 46	DET

No	Code	Course	Semester	No of credicts	Knowledge block	Type of course			Studying activities						Condition		Department responsible for course
						Mandatory	Compulsory Electives	Free Electives	Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
83	1160647	Logic control and PLC practice	8	1	4	x						30		15			DET
84	1160820	Industrial Communication Networks and SCADA practice	8	1	4	x						30		15		11605 94	DET
85	1160051	Lighting engineering	8	2	4	x			22	8				65			DET
86	1160648	Automation project	8	1	4	x							ĐA	45			DET
87	1160649	Wind and Solar Power Integration	8	2	4	x			22	8				65		11604 23	DET
88	1160424	Smart grid laboratory	8	1	4	x						30		15		11603 41	DET
89	1160593	Power system project	8	1	4	x							ĐA	45		11604 23	DET
90	1160551	Power system protection and control	8	3	4	x			31	14				100		11604 23	DET
II.2.2. Elective: 2/8 subjects - 4/16 credicts				***4***										195			
		Choose one of the four following courses:		***2***										95			
91	1160603	Mechanical calculation of overhead power line	8	2	4		x		20	10				65			DET
92	1160052	Refrigeration engineering	8	2	4		x		26	4				65		11600 05	DET
93	1160427	Electrical system standards and design	8	2	4		x		22	8				65			DET
94	1160429	Reliability in Power system	8	2	4		x		26	4				65			DET
		Choose one of the four following courses:		***2***										95			

No	Code	Course	Semester	No of credicts	Knowledge block	Type of course			Studying activities						Condition		Department responsible for course
						Mandatory	Compulsory Electives	Free Electives	Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
95	1160237	Power system operation	8	2	4		x		26	4				65		1160546	DET
96	1160359	Power utilization and saving	8	2	4		x		26	4				65		116004 06	DET
97	1160650	Application of artificial intelligence in electrical engineering	8	2	4		x		30					65			DET
98	1160295	Special subject of electrical engineering	8	2	4		x		30					65		1160546 1160551	DET
II.3. Internship				***8***										395			
99	1160604	Cognitive Internship	3	2	5	x							TT	95			DET
100	1160605	Major Internship	7	2	5	x							TT	95			DET
101	1160606	Graduation Internship	9	4	5	x							TT	195	1160604 1160605	116023 5	DET
II.4. Capstone project				***8***													
102	1160558	Capstone project	9	8	6	x							ĐA	395	1160034 1160546	116043 1	DET
Total				**150**													

*** Note: Knowledge Blocks:**

1: General Education Knowledge;

2: Foundational knowledge;

3: Core Knowledge;

4: Major/Specialized Knowledge;

5: Internship;

6: Capstone project

9. TENTATIVE TEACHING PLAN

Semester 1

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
1	1090061	English 1	3	30	15				100			FLD
2	1010354	Linear Algebra	3	30	15				100			DMS
3	1010052	Calculus 1	3	34	11				100			DMS
4	1020162	Physics 1	2	28		4			63			DNS
5	1160330	Descriptive Geometry and Technical Drawing	3	30	15				100			DET
6	2030003	Communication Skills	2	18		4	20	60	53			DSSH
7		*Choose 1 of the 8 following courses:*										
7.1	*1120172*	*Physical Education 1 (Football 1)*	1	4			26		15			DPE
7.2	*1120175*	*Physical Education 1 (Volleyball 1)*	1	4			26		15			DPE
7.3	*1120178*	*Physical Education 1 (Basketball 1)*	1	4			26		15			DPE
7.4	*1120181*	*Physical Education 1 (Badminton 1)*	1	4			26		15			DPE
7.5	*1120184*	*Physical Education 1 (Vietnamese traditional martial arts 1)*	1	4			26		15			DPE
7.6	*1120187*	*Physical Education 1 (Taekwondo martial arts 1)*	1	4			26		15			DPE
7.7	*1120190*	*Physical Education 1 (Taekwondo martial arts 1)*	1	4			26		15			DPE
7.8	*1120239*	*Physical Education 1 (Pickleball 1)*	1	4			26		15			DPE
Total: 16 Credits			**16**									

Semester 2

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	

1	1130299	Philosophy of Marx – Lenin	3	40		10			95			DPTLSM
2	1090166	English 2	4	40	20				135		1090061	FLD
3	1160490	Fundamentals of Informatics (Engineering)	3	30			30		85			DET
4	1130049	Fundamental of Law	2	27		6			62			DPTLSM
5	1010059	Calculus 2	3	36	9				100		1010052	DMS
6	1020163	Physics 2	2	24	4	4			63		1020162	DNS
7	1020164	Physics Laboratory	1				30		15		1020162	DNS
8		*Choose 1 of the 8 following courses:*										
8.1	*1120173*	*Physical Education 2 (Football 2)*	1	4			26		15		1120172	DPE
8.2	*1120176*	*Physical Education 2 (Volleyball 2)*	1	4			26		15		1120175	DPE
8.3	*1120179*	*Physical Education 2 (Basketball 2)*	1	4			26		15		1120178	DPE
8.4	*1120182*	*Physical Education 2 (Badminton 2)*	1	4			26		15		1120181	DPE
8.5	*1120185*	*Physical Education 2 (Vietnamese traditional martial arts 2)*	1	4			26		15		1120184	DPE
8.6	*1120188*	*Physical Education 2 (Taekwondo martial arts 2)*	1	4			26		15		1120187	DPE
8.7	*1120191*	*Physical Education 2 (Karatedo martial arts 2)*	1	4			26		15		1120190	DPE
8.8	*1120240*	*Physical Education 2 (Pickleball 2)*	1	4			26		15		1120239	DPE
Total: 18 Credits			**18**									

Semester 3

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
1	1130300	Political Economy of Marx – Lenin	2	27		6			62		1130299	DPTLSM
2	1160114	Engineering Mathematics	2	22	8				65		1010059 10103354	DET
3	1160005	Thermal Engineering	2	22	8				65		1020163	DET

4	1160375	Applied Hydraulics	2	24	6				65		1010354 10201 63	DET
5	1160408	Programming techniques	2	16	4		20		55		1160490	DET
6	1010098	Numerical Methods	2	24	6				65		1010052	DMS
7	1160009	Electric circuit theory 1	3	29	16				100		1020163	DET
8	1010129	Probability and Statistics	2	27	3				65		1010354	DMS
9	1160604	Cognitive Internship	2					TT	95			DET
10		*Choose 1 of the 8 following courses:*										
10.1	*1120174*	*Physical Education 3 (Football 3)*	1	4			26		15		1120173	DPE
10.2	*1120177*	*Physical Education 3 (Volleyball 3)*	1	4			26		15		1120176	DPE
10.3	*1120180*	*Physical Education 3 (Basketball 3)*	1	4			26		15		1120179	DPE
10.4	*1120183*	*Physical Education 3 (Badminton 3)*	1	4			26		15		1120182	DPE
10.5	*1120186*	*Physical Education 3 (Vietnamese traditional martial arts 3)*	1	4			26		15		1120185	DPE
10.6	*1120189*	*Physical Education 3 (Taekwondo martial arts 3)*	1	4			26		15		1120188	DPE
10.7	*1120192*	*Physical Education 3 (Karatedo martial arts 3)*	1	4			26		15		1120191	DPE
10.8	*1120241*	*Physical Education 3 (Pickleball 3)*	1	4			26		15		1120240	DPE
Total: 19 Credits			**19**									

Semester 4

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
1	1130301	Scientific Socialism	2	27		6			62		1130300	DPTLSM
2	1160654	Electrical safety	2	30					65		1160009	DET
3	1160407	Analog and Digital Electronic Circuits	2	20	10				65		1020163	DET
4	1160545	Electric circuit theory 2	3	29	16				100		1160009	DET

5	11602 28	Electric circuit theory laboratory	1				30		15		11600 09	DET
6	11600 22	Electric machines 1	3	32	13				100			DET
7	11604 12	Automatic Control Theory	2	23	7				65		11601 14	DET
8	11604 13	Measurement engineering	2	22	8				65		11600 09	DET
9	11201 68	Giáo dục quốc phòng-An ninh 1	3	37		16			92			CNDSE
10	11201 69	Giáo dục quốc phòng-An ninh 2	2	22		16			57			CNDSE
11	11201 70	Giáo dục quốc phòng-An ninh 3	2	14			32		49			CNDSE
12	11201 71	Giáo dục quốc phòng-An ninh 4	2	18			56		21			CNDSE
Total: 17 Credits			**17**									

Semester 5

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
1	11303 02	History of the Communist Party of Vietnam	2	27		6			62		11303 01	DPTLSM
2	11600 34	Electric machines 2	3	32	13				100		11600 22	DET
3	11602 32	Electric machines laboratory	1				30		15		11600 22	DET
4	11608 17	Measurement engineering and Electronic Circuits Laboratory	1				30		15			DET
5	11600 28	Power electronics	3	40	5				100		11604 07	DET
6	11600 13	Electrical Materials	2	30					65		11606 54	DET
7	11608 18	Electrical and electronic engineering practice	1				30		15		11604 07	DET
8	11603 77	English for electrical engineering	2	30					65		11600 22 11600 27	DET
9	11600 27	Electrical Instruments	3	42	3				100		11600 34	DET
Total: 18 Credits			**18**									

Semester 6

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	

1	1160546	Power network	3	35	10				100		1160545 1160034	DET
2	1130091	Ho Chi Minh's Ideology	2	27		6			62		1130302	DPTLSM
3	1150422	Entrepreneurship	2	20	5		10		60			DFBA
4	1160591	Short-circuit in power systems	2	22	8				65		1160034	DET
5	1160032	Electrical Drives	3	37	8				100		1160034	DET
6	1160657	Microcontrollers	2	30					65			DET
7	1160819	Power electronics laboratory	1				30		15		1160028	DET
8	1160393	Electrical apparatus	2	30					65		1160034 1160028	DET
9	1160420	Electrical Equipment Project	1					ĐA	45		1160034 1160027	DET
Total: 18 Credits			**18**									

Semester 7

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
1	1160423	Electric components in Power plant and Substation	3	30	15				100		1160546	DET
2	1160605	Major Internship	2					TT	95			DET
3	1160592	High voltage engineering	3	37	8				100		1020163 1160282	DET
4	1160416	Electrical apparatus practice	1				30		15		1160393	DET
5	1160658	Microcontrollers Practice	1				30		15			DET
6	1160646	Logic Control and PLC	2	20	10				65		1160027 1160393	DET
7	1160594	Industrial Communication Networks and SCADA	2	30					65			DET
8	1160341	Smart grid	2	24	6				65		1160546	DET
Total: 16 Credits			**16**									

Semester 8

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	

1	1160551	Power system protection and control	3	31	14				100		1160423	DET
2	1160647	Logic control and PLC practice	1				30		15			DET
3	1160424	Smart grid laboratory	1				30		15		1160341	DET
4	1160649	Wind and Solar Power Integration	2	22	8				65		1160423	DET
5	1160820	Industrial Communication Networks and SCADA practice	1				30		15		1160594	DET
6	1160593	Power system project	1					ĐA	45		1160423	DET
7	1160648	Automation project	1					ĐA	45			DET
8	1160051	Lighting engineering	2	22	8				65			DET
9		*Choose one of the four following courses:*	2						95			
9.1	*116060 3*	*Mechanical calculation of overhead power line*	2	20	10				65			DET
9.2	*116005 2*	*Refrigeration engineering*	2	26	4				65		1160005	DET
9.3	*116042 7*	*Electrical system standards and design*	2	22	8				65			DET
9.4	*116042 9*	*Reliability in Power system*	2	26	4				65			DET
10		*Choose one of the four following courses:*	2						95			
10.1	*116023 7*	*Power system operation*	2	26	4				65		1160546	DET
10.2	*116035 9*	*Power utilization and saving*	2	26	4				65		1160406	DET
10.3	*116065 0*	*Application of artificial intelligence in electrical engineering*	2	30					65			DET
10.4	*116029 5*	*Special subject of electrical engineering*	2	30	0				65		1160546 1160551	DET
Total: 16 Credits			**16**									

Semester 9

No	Code	Course name	Credits	Studying activities						Condition		Faculty responsible for Course
				Lectures	Assignments	Discussions	Practice/ Experiment	Others	Selfstudy	Prerequisite course	Prior courses	
1	1160606	Graduation Internship	4					TT	195	1160604 1160605	1160235	DET
2	1160558	Capstone project	8					ĐA	395	1160034 1160546	1160431	DET

10. COURSE MATRIX BASED ON PLO/PI

No	Course Code	Course	Semester	Knowledge Block	Credits	Course type	PLO1		PLO2		PLO3		PLO4		PLO5		PLO6		PLO7	
							1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1	7.2
1	1090061	English 1	SEM 1	General Education Knowledge	3	Compulsory	X,I	X,I									Y,I			
2	1010354	Linear Algebra	SEM 1	Foundational Knowledge	3	Compulsory			X,I									Y,I		
3	1010052	Calculus 1	SEM 1	Foundational Knowledge	3	Compulsory			X,I									Y,I		
4	1020162	Physics 1	SEM 1	Foundational Knowledge	2	Compulsory			X,I									Y,I		
5	1160330	Descriptive Geometry and Technical Drawing	SEM 1	Foundational Knowledge	3	Compulsory			X,I								Y,I	Y,I		
6	2030003	Communication Skills	SEM 1	General Education Knowledge	2	Compulsory	Y,I	X,I									Y,I			
7	1130299	Philosophy of Marx – Lenin	SEM 2	General Education Knowledge	3	Compulsory	X,I	Y,I										Y,I		
8	1090166	English 2	SEM 2	General Education Knowledge	4	Compulsory	X,R,A	X,R,A									Y,I			
9	1160490	Fundamentals of Informatics (Engineering)	SEM 2	Foundational Knowledge	3	Compulsory	Y,I			X,I									Y,I	
10	1130049	Fundamental of Law	SEM 2	General Education Knowledge	2	Compulsory	X,I										Y,I	Y,I		
11	1010059	Calculus 2	SEM 2	Foundational Knowledge	3	Compulsory				X,I									Y,I	
12	1020163	Physics 2	SEM 2	Foundational Knowledge	2	Compulsory			X,R										Y,I	
13	1020164	Physics Laboratory	SEM 2	Foundational Knowledge	1	Compulsory			Y,R	Y,R								X,I		
14	1130300	Political Economy of Marx – Lenin	SEM 3	General Education Knowledge	2	Compulsory	X,I	X,I										Y,I		
15	1160114	Engineering Mathematics	SEM 3	Core Knowledge	2	Compulsory			X,I	X,I	Y,I									
16	1160005	Thermal Engineering	SEM 3	Core Knowledge	2	Compulsory			X,R,A									Y,I		
17	1160375	Applied Hydraulics	SEM 3	Core Knowledge	2	Compulsory			X,R,A								Y,I	Y,I		
18	1160408	Programming techniques	SEM 3	Core Knowledge	2	Compulsory			Y,I	X,R,A								Y,I	Y,I	

No	Course Code	Course	Semester	Knowledge Block	Credits	Course type	PLO1		PLO2		PLO3		PLO4		PLO5		PLO6		PLO7	
							1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1	7.2
19	1010098	Numerical Methods	SEM 3	Foundational Knowledge	2	Compulsory			X,R,A	X,R,A	Y,I									
20	1160009	Electric circuit theory 1	SEM 3	Core Knowledge	3	Compulsory				X,R,A	X,R,A							Y,I		
21	1010129	Probability and Statistics	SEM 3	Core Knowledge	2	Compulsory				X,I							Y,I			
22	1160604	Cognitive Internship	SEM 3	Internship	2	Compulsory					Y,I							X,R,A		
23	1130301	Scientific Socialism	SEM 4	General Education Knowledge	2	Compulsory	X,R,A	Y,I									Y,I			
24	1160654	Electrical safety	SEM 4	Core Knowledge	2	Compulsory					X,I			Y,I			Y,I			
25	1160407	Analog and Digital Electronic Circuits	SEM 4	Core Knowledge	2	Compulsory											Y,I	X,R,A		Y,I
26	1160545	Electric circuit theory 2	SEM 4	Core Knowledge	3	Compulsory					X,R	X,R					Y,I	Y,I		
27	1160228	Electric circuit theory laboratory	SEM 4	Core Knowledge	1	Compulsory						X,R					Y,I	Y,I		
28	1160022	Electric machines 1	SEM 4	Core Knowledge	3	Compulsory					X,R,A	X,R,A			Y,I					
29	1160412	Automatic Control Theory	SEM 4	Core Knowledge	2	Compulsory							X,R		Y,I					
30	1160413	Measurement engineering	SEM 4	Core Knowledge	2	Compulsory								Y,I	X,R,A	X,R,A				
31	1130302	History of the Communist Party of Vietnam	SEM 5	Foundational Knowledge	2	Compulsory	X,R,A	Y,R									Y,I			
32	1160034	Electric machines 2	SEM 5	Core Knowledge	3	Compulsory					X,R,A	X,R,A			Y,R					
33	1160232	Electric machines laboratory	SEM 5	Core Knowledge	1	Compulsory							Y,I	X,R		Y,I				
34	1160817	Measurement engineering and Electronic Circuits Laboratory	SEM 5	Core Knowledge	1	Compulsory							Y,I	X,R					Y,I	
35	1160028	Power electronics	SEM 5	Core Knowledge	3	Compulsory							X,R	X,R	Y,I	Y,I				
36	1160013	Electrical Materials	SEM 5	Core Knowledge	2	Compulsory					X,R	Y,I					Y,I			

No	Course Code	Course	Semester	Knowledge Block	Credits	Course type	PLO1		PLO2		PLO3		PLO4		PLO5		PLO6		PLO7	
							1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1	7.2
37	1160818	Electrical and electronic engineering practice	SEM 5	Core Knowledge	1	Compulsory										X,R	Y,I	X,R,A		
38	1160377	English for electrical engineering	SEM 5	Core Knowledge	2	Compulsory											Y,I	Y,I		X,I
39	1160027	Electrical Instruments	SEM 5	Core Knowledge	3	Compulsory					X,R,A	Y,R		X,R,A						
40	1160546	Power network	SEM 6	Major/Specilized Knowledge	3	Compulsory							X,R,A		X,E,A	Y,I				
41	1130091	Ho Chi Minh's Ideology	SEM 6	General Education Knowledge	2	Compulsory	X,R	Y,R										Y,I		
42	1150422	Entrepreneurship	SEM 6	General Education Knowledge	2	Compulsory		X,R,A										Y,I		
43	1160591	Short-circuit in power systems	SEM 6	Major/Specilized Knowledge	2	Compulsory					X,R,A	X,R,A		Y,R						
44	1160032	Electrical Drives	SEM 6	Major/Specilized Knowledge	3	Compulsory							X,R						Y,I	Y,I
45	1160657	Microcontrollers	SEM 6	Major/Specilized Knowledge	2	Compulsory						X,R								Y,I
46	1160819	Power electronics laboratory	SEM 6	Major/Specilized Knowledge	1	Compulsory								X,R	Y,I					
47	1160393	Electrical apparatus	SEM 6	Major/Specilized Knowledge	2	Compulsory						X,R,A		Y,I						
48	1160420	Electrical Equipment Project	SEM 6	Major/Specilized Knowledge	1	Compulsory		X,I				X,E,A		X,R,A						Y,I
49	1160423	Electric components in Power plant and Substation	SEM 7	Major/Specilized Knowledge	3	Compulsory							X,R,A	X,E,A	Y,I	X,R,A				
50	1160605	Major Internship	SEM 7	Internship	2	Compulsory									Y,I	Y,R		X,E,A		
51	1160592	High voltage engineering	SEM 7	Major/Specilized Knowledge	3	Compulsory							X,R,A		X,R,A	X,R,A				
52	1160660	Electrical apparatus practice	SEM 7	Major/Specilized Knowledge	1	Compulsory							Y,R	Y,R				X,R		

No	Course Code	Course	Semester	Knowledge Block	Credits	Course type	PLO1		PLO2		PLO3		PLO4		PLO5		PLO6		PLO7	
							1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1	7.2
53	1160658	Microcontrollers Practice	SEM 7	Major/Specilized Knowledge	1	Compulsory								Y,R				X,R		
54	1160646	Logic Control and PLC	SEM 7	Major/Specilized Knowledge	2	Compulsory						X,R		Y,R						
55	1160594	Industrial Communication Networks and SCADA	SEM 7	Major/Specilized Knowledge	2	Compulsory						X,R							Y,R	
56	1160341	Smart grid	SEM 7	Major/Specilized Knowledge	2	Compulsory							X,R,A		X,E,A	Y,I			Y,I	
57	1160551	Power system protection and control	SEM 8	Major/Specilized Knowledge	3	Compulsory							X,R,A	X,R,A	X,R,A	Y,I				
58	1160647	Logic control and PLC practice	SEM 8	Major/Specilized Knowledge	1	Compulsory								Y,R					X,R,A	
59	1160424	Smart grid laboratory	SEM 8	Major/Specilized Knowledge	1	Compulsory							Y,R		Y,R	Y,R			X,R	
60	1160649	Wind and Solar Power Integration	SEM 8	Major/Specilized Knowledge	2	Compulsory									X,R,A	X,R,A	Y,R			
61	1160820	Industrial Communication Networks and SCADA practice	SEM 8	Major/Specilized Knowledge	1	Compulsory									X,R			X,R	Y,R	
62	1160593	Power system project	SEM 8	Major/Specilized Knowledge	1	Compulsory							X,E,A	X,R,A		X,R,A	X,R,A		X,E,A	X,E,A
63	1160648	Automation project	SEM 8	Major/Specilized Knowledge	1	Compulsory							X,E,A			X,R,A	X,R,A			
64	1160051	Lighting engineering	SEM 8	Major/Specilized Knowledge	2	Compulsory							X,R		Y,R					
		Choose one of the four following courses:	SEM 8	Major/Specilized Knowledge	2									X,R,A		Y,R	X,E,A			X,R,A
65	*1160603*	*Mechanical calculation of overhead power line*	SEM 8	Major/Specilized Knowledge	2	Compulsory Electives														
66	*1160052*	*Refrigeration engineering*	SEM 8	Major/Specilized Knowledge	2	Compulsory Electives														

No	Course Code	Course	Semester	Knowledge Block	Credits	Course type	PLO1		PLO2		PLO3		PLO4		PLO5		PLO6		PLO7	
							1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1	7.2
67	*1160427*	*Electrical system standards and design*	SEM 8	Major/Specilized Knowledge	2	Compulsory Electives														
68	*1160429*	*Reliability in Power system*	SEM 8	Major/Specilized Knowledge	2	Compulsory Electives														
		Choose one of the four following courses:	SEM 8	Major/Specilized Knowledge									X,R,A	X,R,A			X,E,A			X,R,A
69	*1160237*	*Power system operation*	SEM 8	Major/Specilized Knowledge	2	Compulsory Electives														
70	*1160359*	*Power utilization and saving*	SEM 8	Major/Specilized Knowledge	2	Compulsory Electives														
71	*1160650*	*Application of artificial intelligence in electrical engineering*	SEM 8	Major/Specilized Knowledge	2	Compulsory Electives														
72	*1160295*	*Special subject of electrical engineering*	SEM 8	Major/Specilized Knowledge	2	Compulsory Electives														
73	1160606	Graduation Internship	SEM 9	Internship	4	Compulsory					X,E,A	Y,E	X,E,A	X,E,A	Y,R	X,E,A		X,E,A		
74	1160558	Capstone project	SEM 9	Capstone project	8	Compulsory					X,E,A	X,E,A	X,E,A	X,E,A	X,E,A	X,E,A	X,E,A		X,E,A	X,E,A

Note:

- X, Y: The level of contribution of each course to the PLOs. In which: X indicates that the course makes a direct (core) contribution to the PLO; Y indicates that the course makes an indirect contribution to the PLO.

- I, R, E: The level of attainment/contribution of each course to the PLOs. In which: I – Introduced: Students acquire fundamental knowledge and basic content of the course. R – Reinforced: Students are able to recall and explain the course content. E – Emphasized: Students are able to apply and perform tasks based on the course content.

- A: Assessment

PLO1. Apply general education knowledge and entrepreneurial thinking to identify social issues.		PLO2. Apply fundamental scientific knowledge to analyze and solve problems in the field of electrical engineering.		PLO3. Select electrical equipment and apparatus in accordance with technical requirements to ensure safe and efficient operation.		PLO4. Design power supply systems and automated control systems that meet technical and economic requirements.		PLO5. Evaluate the operational efficiency of components in the power system through simulation and experimentation.		PLO6. Develop self-learning skills, discipline, and professional responsibility to meet job requirements in electrical engineering.		PLO7. Apply digital competencies in work, adapting to technological development trends and integration environments.	
PI1.1. Apply general education knowledge to identify social issues.	PI1.2. Possess communication, teamwork, presentation, and entrepreneurial thinking skills.	PI2.1. Apply basic scientific knowledge to explain physical phenomena.	PI2.2. Apply basic scientific knowledge to reason and interpret professional issues.	PI3.1. Determine technical specifications for selecting electrical equipment and apparatus.	PI3.2. Check the operation of the selected electrical equipment and apparatus	PI4.1. Outline preliminary design options suitable for the initial data.	PI4.2. Determine the optimal technical and economic option for design calculation.	PI5.1. Select software and hardware for simulation and experimentation.	PI5.2. Analyze and evaluate simulation and experimental results.	PI6.1. Able to self-learn and conduct independent research to improve professional expertise.	PI6.2. Possess discipline, professional responsibility, and critical thinking.	PI7.1. Effectively use digital technologies in work and daily life.	PI7.2. Able to communicate and collaborate in a digital environment.

11. GUIDELINES FOR PROGRAM IMPLEMENTATION

- This program is implemented starting from the 2025 admission cohort for students majoring in Electrical Engineering.

- The training process is developed based on the designed curriculum, the educational objectives and target learners, workforce requirements, and specific training demands. For elective courses, depending on practical conditions, development trends, and societal needs, the Faculty will advise students in selecting appropriate courses.

- The Dean of the Department of Engineering and Technology is responsible for organizing and providing guidance on the principles for developing detailed course syllabi to ensure that the objectives, content, and requirements are fully met, while also satisfying the needs of learners and society.

- The program is reviewed and updated at least once every five years to ensure alignment with the development of the Electrical Engineering discipline and the socio-economic development needs./.

Gia Lai, July 22, 2025

RECTOR

Assoc. Prof. Dr. Doan Duc Tung