MINISTRY OF INDUSTRY AND TRADE
HO CHI MINH CITY UNIVERSITY OF INDUSTRY AND TRADE

CURRICULUM
ELECTRICAL ENGINEERING PROGRAM

Program name: **Electrical Engineering**

Degree level: Master's

Major code: 8520201

Mode of training: Full-time

Managing faculty: Faculty of Electrical and Electronics Engineering

HO CHI MINH CITY, 2024

MINISTRY OF INDUSTRY AND TRADE
HO CHI MINH CITY UNIVERSITY OF INDUSTRY AND TRADE

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

CURRICULUM

(*Issued under Decision No. 2554/QĐ-DCT dated August 19, 2024 by the Rector of Ho Chi Minh City University of Industry and Trade*)

Program name: **Electrical Engineering**

Degree level: Master's

Major code: 8520201

Field of training: Engineering

Mode of training: Full-time

Managing faculty: Faculty of Electrical and Electronics Engineering

Information on program quality accreditation:

This academic program has been developed with the orientation of registering for external program-level accreditation in accordance with the educational quality standards issued by the Minister of Education and Training (MOET) since 2019.

1. Objectives of Training Program

1.1. Objectives of Training Program (for the research-oriented master's program)

To train human resources with strong ethical qualities and research-oriented thinking in the field of Electrical Engineering, meeting the demands of socio-economic development and international integration. The program equips learners with advanced, updated, and enhanced specialized knowledge; skills in synthesizing issues related to Electrical Engineering; the ability to systematize information sources and scientific evidence in the field; skills in reporting scientific issues and analyzing research results; as well as competencies in research management and professional leadership to address scientific problems in Electrical Engineering.

1.2. Objectives of Training Program (for the application-oriented master's program)

To train human resources with strong ethical qualities and application-oriented thinking in the field of Electrical Engineering, meeting the demands of socio-economic development and international integration. The program equips learners with

advanced, updated, and enhanced specialized knowledge; skills in synthesizing issues related to Electrical Engineering; the ability to systematize information sources and scientific evidence in the field; adherence to research ethics; skills in reporting scientific issues and analyzing research results; and the ability to organize and manage research teams to carry out application-oriented research tasks aimed at solving scientific problems in Electrical Engineering.

2. Program Learning Outcomes

Upon completion of the program, graduates will possess the following knowledge, skills, and professional competencies:

2.1. Program Learning Outcomes for the Research-Oriented Master's Program

Code	Description of Program Learning Outcome	Level of Competency
a	**Knowledge**	
PLO1	**Apply interdisciplinary knowledge related to Electrical Engineering**	**C3**
PLO2	**Evaluate production lines, electrical equipment, and power systems based on systematic, in-depth, and broad knowledge relevant to Electrical Engineering**	**C5**
b	**Personal Skills and Attributes**	
PLO3	**Develop skills in synthesizing issues related to Electrical Engineering**	**P5**
PLO4	**Develop the ability to systematize information sources and scientific evidence in Electrical Engineering**	**P5**
PLO5	**Demonstrate respect for intellectual property rights and research ethics in Electrical Engineering**	**A4**
c	**Interpersonal Skills**	
PLO6	**Develop skills in reporting scientific issues and analyzing research results in Electrical Engineering**	**P5**
d	**Professional Competence (Autonomy and Responsibility)**	
PLO7	**Develop and create useful solutions in Electrical Engineering to generate new knowledge or solve practical problems**	**R5**
PLO8	**Develop competencies in managing scientific research projects and professional operations in Electrical Engineering**	**P5**

2.2. Matrix of Courses and Program Learning Outcomes for the Research-Oriented Master's Program

No	Course Code	Internal Code	Course Title	Knowledge	Credits	Course Type	Program Learning Outcomes (PLOs)							
							1	2	3	4	5	6	7	8
1	100408	11100012	Philosophy *(*)*	*Philosophy*	3(3,0)	*Compulsory*	*C3*			*P3*		P3		
2	101766	02100002	Advanced power electronics *(*)*	*Major*	3(3,0)	*Compulsory*		*C5*	*P4*			P4	R4	
3	100464	02100004	Advanced power system analysis *(*)*	*Major*	3(3,0)	*Compulsory*		*C5*	*P4*			P5	R5	
4	101516	02100001	Advanced electrical machine analysis	*Major*	3(3,0)	*Elective*		*C4*	*P5*			P5	R5	
5	101518	02100005	Advanced control of electric machines	*Major*	3(3,0)	*Elective*	C3	*C5*	*P5*			P5	R5	
6	102357	02100032	Intelligent control system	*Major*	3(3,0)	*Elective*		*C4*	*P4*			P4	P4	
7	102939	02100033	SCADA Systems	*Major*	2(2,0)	*Elective*		C5	P4			P4	R4	
8	102360	02100034	Machine learning and applications	*Major*	3(3,0)	*Elective*	C3	C5	P5				R5	
9	102940	02100035	Microcontroller TMS320	*Major*	3(3,0)	*Elective*	C3		P5			P5	R5	
10	102941	02100036	Advanced Internet of Things	*Major*	2(2,0)	*Elective*		C4	P4			P5	R4	
11	100473	02100010	Power system transient and stability	*Major*	3(3,0)	*Elective*		C5	P5			P5	R4	
12	101439	02100014	Efficient management and use of energy	*Major*	2(2,0)	*Elective*	C4	C5					R5	P5
13	100474	02100015	Smart grid	*Major*	3(3,0)	*Elective*		C5	P4			P4	R5	
14	103061	02100044	Power electronics in photovoltaic and wind power systems	*Major*	3(3,0)	*Elective*		C5	P4			P4	R5	
15	102356	02100037	Renewable energy	*Major*	3(3,0)	*Elective*		C5	P5			P5	R5	
16	100470	02100018	Power system planning	*Major*	3(3,0)	*Elective*		C5	P5			P5	R5	
17	100471	02100009	Flexible AC transmission system and high voltage DC	*Major*	3(3,0)	*Elective*		C5	P5			P5	R5	
18	100475	02100011	Electricity Markets	*Major*	3(3,0)	*Elective*		C4		P5		P5	R5	

19	101437	02100012	Power system operation and power distribution optimization	*Major*	3(3,0)	*Elective*		C5	P5			P5	R5	
20	102943	02100043	Power conversion in electric vehicles	*Major*	3(3,0)	*Elective*		C4	P4			P4	R4	
21	101442	13100011	Production Management and Service	*Management*	2(2,0)	*Elective*		C3				P4		P4
22	100571	13100003	Leadership Science	*Management*	2(2,0)	*Elective*		C3				P4		P4
23	102946	02100040	Research proposal in electrical engineering 1 *(*)*	*Research proposal*	3(0,3)	*Compulsory*		C5	P5		A4	P5	R5	
24	102947	02100041	Research proposal in electrical engineering 2 *(*)*	*Research proposal*	3(0,3)	*Compulsory*	C3	C5	P5	P5	A4	P5	R5	
25	102948	02100042	Research proposal in electrical engineering 3 *(*)*	*Research proposal*	3(0,3)	*Compulsory*		C5	P5	P5	A4	P5	R5	
26	101446	02104022	Internship *(*)*	*Internship*	3(0,3)	*Compulsory*	C3	C5	P5		A4	P5		P5
27	101450	02106026	Graduation thesis *(*)*	*Thesis*	15(0,15)	*Compulsory*	C3	C5	P5	P5	A4	P5	R5	
Number of Courses Contributing to the Program Learning Outcomes							8	25	22	5	5	25	19	4

<u>Notes</u>:

Specialized courses (Major), Research topic courses (*Research proposal*), *Internship courses (Internship), Management courses (Management)*

(*) denotes core courses, which belong to the group of compulsory courses (or electives according to the selected specialization), and must include Internship, Research Topics, and Thesis courses

The competency levels in this table are measured according to the following scales: ***Knowledge*** *(Bloom's Taxonomy-* ***C****ognitive domain);* ***Behavioral skills*** *(Bloom's Taxonomy –* ***P****sychomotor domain);* ***Affective skills/attitudes*** *(Bloom's Taxonomy –* ***A****ffective domain) and* ***Competency levels*** *(Crawley-Proficiency* ***R****ating scale)*

2.3. Program Learning Outcomes for the Application-Oriented Master's Program

Code	Description of Program Learning Outcome	Level of Competency
a	**Knowledge**	
PLO1	**Apply interdisciplinary knowledge related to Electrical Engineering**	**C3**
PLO2	**Evaluate production lines, electrical equipment, and power systems based on systematic, in-depth, and broad knowledge relevant to Electrical Engineering**	**C5**
b	**Personal Skills and Attributes**	
PLO3	**Develop skills in synthesizing issues related to Electrical Engineering**	**P5**
PLO4	**Develop the ability to systematize information sources and scientific evidence in Electrical Engineering**	**P5**
PLO5	**Demonstrate respect for intellectual property rights in Electrical Engineering**	**A4**
c	**Interpersonal Skills**	
PLO6	**Develop skills in reporting scientific issues and analyzing research results in Electrical Engineering**	**P5**
d	**Professional Competence (Autonomy and Responsibility)**	
PLO7	**Implement application-oriented projects in Electrical Engineering in practice**	**R4**
PLO8	**Develop competencies in organizing and managing teams to carry out assigned application-oriented projects in Electrical Engineering**	**P5**

2.4. Matrix of Courses and Program Learning Outcomes for the Application-Oriented Master's Program

No	Course Code	Internal Code	Course Title	Knowledge	Credits	Course Type	Program Learning Outcomes (PLOs)							
							1	2	3	4	5	6	7	8
1	100408	11100012	Philosophy *(*)*	*Philosophy*	3(3,0)	*Compulsory*	*C3*			*P3*		P3		
2	101766	02100002	Advanced power electronics *(*)*	*Major*	3(3,0)	*Compulsory*		*C5*	*P4*			P4	R4	
3	100464	02100004	Advanced power system analysis *(*)*	*Major*	3(3,0)	*Compulsory*		*C5*	*P4*			P5	R5	
4	101516	02100001	Advanced electrical machine analysis *(*)*	*Major*	3(3,0)	*Compulsory*		*C4*	*P5*			P5	R5	
5	102938	02100031	Research proposal in electrical engineering *(*)*	*Major*	3(0,3)	*Compulsory*		*C5*		*P5*	A4	P5	R5	
6	100463	02100003	Advanced control	*Major*	2(2,0)	*Elective*	C3		P4			P4	R5	
7	101518	02100005	Advanced control of electric machines	*Major*	3(3,0)	*Elective*	C3	*C5*	*P5*			P5	R5	
8	102357	02100032	Intelligent control system	*Major*	3(3,0)	*Elective*		*C4*	*P4*			P4	P4	
9	102939	02100033	SCADA Systems	*Major*	2(2,0)	*Elective*		C5	P4			P4	R4	
10	102360	02100034	Machine learning and applications	*Major*	3(3,0)	*Elective*	C3	C5	P5				R5	
11	102940	02100035	Microcontroller TMS320	*Major*	3(3,0)	*Elective*	C3		P5			P5	R5	
12	102941	02100036	Advanced Internet of Things	*Major*	2(2,0)	*Elective*		C4	P4			P5	R4	
13	100473	02100010	Power system transient and stability	*Major*	3(3,0)	*Elective*		C5	P5			P5	R4	
14	103062	02100045	Power quality	*Major*	2(2,0)	*Elective*		C5	P5			P5	R5	
15	101439	02100014	Efficient management and use of energy	*Major*	2(2,0)	*Elective*	C4	C5					R5	P5
16	100474	02100015	Smart grid	*Major*	3(3,0)	*Elective*		C5	P4			P4	R5	
17	103061	02100044	Power electronics in photovoltaic and wind power	*Major*	3(3,0)	*Elective*		C5	P4			P4	R5	

			systems											
18	102356	02100037	Renewable energy	*Major*	3(3,0)	*Elective*		C3	P5			P5	R5	
19	100470	02100018	Power system planning	*Major*	3(3,0)	*Elective*		C5	P5			P5	R5	
20	100471	02100009	Flexible AC transmission system and high voltage DC	*Major*	3(3,0)	*Elective*		C5	P5			P5	R5	
21	100475	02100011	Electricity Markets	*Major*	3(3,0)	*Elective*		C4		P5		P5	R5	
22	101437	02100012	Power system operation and power distribution optimization	*Major*	3(3,0)	*Elective*		C5	P5			P5	R5	
23	102943	02100043	Power conversion in electric vehicles	*Major*	3(3,0)	*Elective*		C4	P4			P4	R4	
24	101442	13100011	Production Management and Service	*Management*	2(2,0)	*Elective*		C3				P4		P4
25	100571	13100003	Leadership Science	*Management*	2(2,0)	*Elective*		C3				P4		P4
26	102944	02104038	Internship *(*)*	*Internship*	8(0,8)	*Compulsory*	C3	C5	P5		A4	P5		P5
27	102945	02106039	Graduation project *(*)*	*Project*	8(0,8)	*Compulsory*	C3	C5	P5	P5	A4	P5	R5	
Number of Courses Contributing to the Program Learning Outcomes					60		8	23	20	4	3	25	23	4

<u>Notes</u>:

Specialized courses (Major), Internship courses (Internship), Management courses (Management)

(*)denotes core courses, which belong to the group of compulsory courses (or electives according to the selected specialization), and must include Internship and Project courses

3. Workload of Program

3.1. Research-Oriented Program

No	Content	Credits	Percentage (%)
1	Philosophy	3	5%
2	Specialized courses	30	50%
3	Research topics and internship	12	20%
4	Thesis	15	25%
Total accumulated credits		**60**	**100%**

3.2. Application-Oriented Program

No	Content	Credits	Percentage (%)
1	Philosophy	3	5%
2	Specialized Courses and Research Course	41	68,3%
3	Internship	8	13,3%
4	Project	8	13,3%
Total accumulated credits		**60**	**100%**

4. Program Duration

Designed duration: 1.5 years.

Maximum completion time: Includes the designed duration and any permitted extension in accordance with the Graduate Training Regulations (issued together with Decision No. 1279/QĐ-DCT dated April 26, 2024, by the Rector of Ho Chi Minh City University of Industry and Trade).

5. Degree

The Master's degree is awarded to students who have successfully completed the program, accumulated the required number of credits, and satisfied all graduation requirements in accordance with the University's Graduate Training Regulations.

6. Admission Requirements

6.1. Requirements for Applicants

- Have graduated from university or are eligible for university graduation recognition (or equivalent level or higher) in a major relevant to the registered master's training major/specialization of the University. For research-oriented programs, a graduation classification of good or above is required, or having scientific publications related to the intended field of study and research.
- Meet other requirements of the training program standards issued by the Ministry of Education and Training and the regulations of the University's training program.

- One of the foreign language degrees or certificates at a level equivalent to Level 3 or higher according to the 6-level Foreign Language Proficiency Framework for Vietnam, or other equivalent certificates announced by the Ministry of Education and Training, valid up to the date of application registration. Upon receiving the degree or certificate, Ho Chi Minh City University of Industry and Trade will verify it to ensure authenticity.

6.2. Application Documents

No.	List of application documents
1	Application form
2	Curriculum vitae (with a photo bearing an overlapping stamp, certified by the employer or local residential authority)
3	Certificate of good health for study, valid for 06 months from the date of issue to the date of application submission
4	01 Certified copy of ID card/Citizen Identity Card
5	01 Certified copy of bachelor's degree + 01 certified copy of transcript (If the candidate studied an articulation bachelor's program, both the graduation diploma + transcript of the college/intermediate/articulation level must be submitted)
6	01 Certified copy of foreign language degree/certificate
7	01 Certificate of work seniority at the workplace (if any)
8	01 Certificate and transcript of supplementary courses (if any)

- In case the bachelor's degree and transcript are issued by a foreign educational institution, they must be translated and notarized into Vietnamese and submitted together with the recognition document from the Quality Management Department.

7. Assessment Methods

In accordance with the Graduate Training Regulations (issued together with Decision No. 1279/QĐ-DCT dated April 26, 2024, by the Rector of Ho Chi Minh City University of Industry and Trade) and the Regulations on Examinations, Testing, and Learning Assessment (issued together with Decision No. 2402/QĐ-DCT dated August 22, 2023, by the Rector of Ho Chi Minh City University of Industry and Trade).

8. Training Regulations and Graduation Requirements

Graduation consideration and recognition: In accordance with the Graduate Training Regulations (issued together with Decision No. 1279/QĐ-DCT dated April 26, 2024, by the Rector of Ho Chi Minh City University of Industry and Trade).

Foreign language requirement: In accordance with the Regulations on Foreign Language Exit Standards (issued together with Decision No. 1281/QĐ-DCT dated April 26, 2024, by the Rector of Ho Chi Minh City University of Industry and Trade).

9. Career Opportunities after Graduation

After graduation, Master's graduates in Electrical Engineering may:

- Teach at universities and colleges;
- Conduct advanced research in Electrical Engineering at research institutes or academic institutions;
- Work directly in production, supervise operations in industrial manufacturing and construction enterprises, or take on managerial roles in science and technology management agencies at the local level.

10. Further Study Opportunities

Graduates may pursue doctoral studies (PhD) in Electrical Engineering

11. Program Curriculum Content

11.1. Research-Oriented Program

No	Course Code	Internal Code	Course Title	Credits
I. Compulsory Courses				**9**
1.	100408	11100012	Philosophy	3(3,0)
2.	101766	02100002	Advanced power electronics	3(3,0)
3.	100464	02100004	Advanced power system analysis	3(3,0)
II. Elective Courses (Select at least 9 courses) *(Select at least 7 courses from Group A, at least 1 course from Group B, and at least 1 course from Group C)*				**24**
	Group A		*(Select at least 7 courses)*	**19**
1.	101516	02100001	Advanced electrical machine analysis	3(3,0)
2.	102357	02100032	Intelligent control system	3(3,0)
3.	102939	02100033	SCADA Systems	2(2,0)
4.	102360	02100034	Machine learning and applications	3(3,0)
5.	102940	02100035	Microcontroller TMS320	3(3,0)
6.	102941	02100036	Advanced Internet of Things	2(2,0)
7.	101439	02100014	Efficient management and use of energy	2(2,0)
8.	100474	02100015	Smart grid	3(3,0)
9.	103061	02100044	Power electronics in photovoltaic and wind power systems	3(3,0)
10.	101518	02100005	Advanced control of electric machines	3(3,0)
11	102943	02100043	Power conversion in electric vehicles	3(3,0)

No	Course Code	Internal Code	Course Title	Credits
	Group B		*(Select at least 1 course)*	**3**
1.	102356	02100037	Renewable energy	3(3,0)
2.	100473	02100010	Power system transient and stability	3(3,0)
3.	100470	02100018	Power system planning	3(3,0)
4.	100471	02100009	Flexible AC transmission system and high voltage DC	3(3,0)
5.	100475	02100011	Electricity Markets	3(3,0)
6.	101437	02100012	Power system operation and power distribution optimization	3(3,0)
	Group C		*(Select at least 1 course)*	**2**
1.	101442	13100011	Production Management and Service	2(2,0)
2.	100571	13100003	Leadership Science	2(2,0)
III. Research topics and internship				**12**
1.	101447	02107040	Research proposal in electrical engineering 1	3(0,3)
2.	101448	02107041	Research proposal in electrical engineering 2	3(0,3)
3.	101449	02107042	Research proposal in electrical engineering 3	3(0,3)
4.	101446	02104022	Internship	3(0,3)
IV. Thesis				**15**
1.	101450	02106026	Graduation thesis	15(0,15)
Total Credits for the Overall Program				**60**

11.2. Application-Oriented Program

No	Course Code	Internal Code	Course Title	Credits
I. Compulsory Courses				15
1.	0311100408	11100012	Philosophy	3(3,0)
2.	101766	02100002	Advanced power electronics	3(3,0)
3.	100464	02100004	Advanced power system analysis	3(3,0)
4.	101518	02100005	Advanced control of electric machines	3(3,0)
5.	102938	02100031	Research proposal in electrical engineering	3(0,3)
II. Elective Courses (Select at least 11 courses) *(Select at least 7 courses from Group A, at least 3 courses from Group B, and at least 1 course from Group C)*				**29**

No	Course Code	Internal Code	Course Title	Credits
	*Group **A***		***(Select at least 7 courses)***	19
1.	101516	02100001	Advanced electrical machine analysis	3(3,0)
2.	102357	02100032	Intelligent control system	3(3,0)
3.	102939	02100033	SCADA Systems	2(2,0)
4.	102360	02100034	Machine learning and applications	3(3,0)
5.	102940	02100035	Microcontroller TMS320	3(3,0)
6.	102941	02100036	Advanced Internet of Things	2(2,0)
7.	100463	02100003	Advanced control	2(2,0)
8.	100474	02100015	Smart grid	3(3,0)
9.	103061	02100044	Power electronics in photovoltaic and wind power systems	3(3,0)
10.	102356	02100037	Renewable energy	3(3,0)
	*Group **B***		*(Select at least 3 courses)*	**8**
1.	101439	02100014	Efficient management and use of energy	2(2,0)
2.	100473	02100010	Power system transient and stability	3(3,0)
3.	103062	02100045	Power quality	2(2,0)
4.	100470	02100018	Power system planning	3(3,0)
5.	100471	02100009	Flexible AC transmission system and high voltage DC	3(3,0)
6.	100475	02100011	Electricity Markets	3(3,0)
7.	101437	02100012	Power system operation and power distribution optimization	3(3,0)
	*Group **C***		*(Select at least 1 course)*	**2**
1.	101442	13100011	Production Management and Service	2(2,0)
2.	100571	13100003	Leadership Science	2(2,0)
III. Internship				**8**
1.	102944	02104038	**Internship**	8(0,8)
IV. Project				**8**
1.	102945	02106039	Graduation Project	8(0,8)
Total Credits for the Overall Program				**60**

12. Training Plan

12.1. Research-Oriented Program

No	Course Code	Internal Code	Course Title	Credits	Notes
Semester 1: 21 credits					
Compulsory courses				**6**	
1.	100408	11100012	Philosophy	3(3,0)	
2.	101766	02100002	Advanced power electronics	3(3,0)	
Elective courses *(Select 5 courses)*				**15**	
	Group A		*(Select 5 courses)*	**15**	
1.	101516	02100001	Advanced electrical machine analysis	3(3,0)	
2.	101440	02100016	Intelligent control system	3(3,0)	
3.	102360	02100034	Machine learning and applications	3(3,0)	
4.	102940	02100035	Microcontroller TMS320	3(3,0)	
5.	100474	02100015	Smart grid	3(3,0)	
6.	103061	02100044	Power electronics in photovoltaic and wind power systems	3(3,0)	
7.	101518	02100005	Advanced control of electric machines	3(3,0)	
8.	102943	02100043	Power conversion in electric vehicles	3(3,0)	
Semester 2: 18 credits					
Compulsory courses				**9**	
1.	100464	02100004	Advanced power system analysis	3(3,0)	
2.	102946	02107040	Research proposal in electrical engineering 1	3(0,3)	
3.	102947	02107041	Research proposal in electrical engineering 2	3(0,3)	
Elective courses *(Select 4 courses)*				**9**	
	Group A		*(Select 2 courses)*	**4**	
1.	102939	02100033	SCADA Systems	2(2,0)	
2.	102941	02100036	Advanced Internet of Things	2(2,0)	
3.	101439	02100014	Efficient management and use of energy	2(2,0)	
	Group B		*(Select 1 courses)*	**3**	
1.	102356	02100037	Renewable energy	3(3,0)	
2.	100473	02100010	Power system transient and stability	3(3,0)	
3.	100470	02100018	Power system planning	3(3,0)	
4.	100471	02100009	Flexible AC transmission system and high voltage DC	3(3,0)	
5.	100475	02100011	Electricity Markets	3(3,0)	

No	Course Code	Internal Code	Course Title	Credits	Notes
6.	101437	02100012	Power system operation and power distribution optimization	3(3,0)	
	Group C		*(Select 1 courses)*	**2**	
1.	101442	13100011	Production Management and Service	2(2,0)	
2.	100571	13100003	Leadership Science	2(2,0)	
Semester 3: 21 credits					
1.	102948	02107042	Research proposal in electrical engineering 3	3(0,3)	
2.	101446	02104022	Internship	3(0,3)	
3.	101450	02106026	Graduation thesis	15(0,15)	

12.2. Application-Oriented Program

No	Course Code	Internal Code	Course Title	Credits	Notes
Semester 1: 21 credits					
Compulsory courses				**6**	
1.	100408	11100012	Philosophy	3(3,0)	
2.	101766	02100002	Advanced power electronics	3(3,0)	
Elective courses *(Select 5 courses)*				**15**	
	Group A		*(Select 5 courses)*	**15**	
1.	101516	02100001	Advanced electrical machine analysis	3(3,0)	
2.	102357	02100032	Intelligent control system	3(3,0)	
3.	102360	02100034	Machine learning and applications	3(3,0)	
4.	102940	02100035	Microcontroller TMS320	3(3,0)	
5.	100474	02100015	Smart grid	3(3,0)	
6.	103061	02100044	Power electronics in photovoltaic and wind power systems	3(3,0)	
7.	102356	02100037	Renewable energy	3(3,0)	
8.	102943	02100043	Power conversion in electric vehicles	3(3,0)	
Semester 2: 21 credits					
Compulsory courses				**9**	
1.	100464	02100004	Power conversion in electric vehicles	3(3,0)	
2.	101518	02100005	Advanced control of electric machines	3(3,0)	
3.	102938	02100031	Research proposal in electrical engineering	3(0,3)	
Elective courses *(Select 5 courses)*				**12**	

No	Course Code	Internal Code	Course Title	Credits	Notes
	Group A		*(Select 2 courses)*	**4**	
1.	102939	02100033	SCADA Systems	2(2,0)	
2.	102941	02100036	Advanced Internet of Things	2(2,0)	
3.	100463	02100003	Advanced control	2(2,0)	
	Group B		*(Select 3 courses)*	**8**	
1.	101439	02100014	Efficient management and use of energy	2(2,0)	
2.	100473	02100010	Power system transient and stability	3(3,0)	
3.	103062	02100045	Power quality	2(2,0)	
4.	100470	02100018	Power system planning	3(3,0)	
5.	100471	02100009	Flexible AC transmission system and high voltage DC	3(3,0)	
6.	100475	02100011	Electricity Markets	3(3,0)	
7.	101437	02100012	Power system operation and power distribution optimization	3(3,0)	
Semester 3: 18 credits					
Compulsory courses				**16**	
1.	102944	02104038	Internship	8(0,8)	
2.	102945	02104039	Graduation project	8(0,8)	
	Group C		*(Select 1 courses)*	**2**	
1.	101442	13100011	Production Management and Service	2(2,0)	
2.	100571	13100003	Leadership Science	2(2,0)	

13. Training Quality Control and Assurance

Units are responsible for developing and implementing the Training Quality Control and Assurance Plan in accordance with the approved Curriculum and current Regulations on Teaching.

14. Implementation Guidelines

14.1. For Faculties and Departments

- Responsible for organizing the proper implementation of the program's content requirements and advising and guiding learners in registering for courses.

- Assign lecturers in charge of each course and provide course syllabi to the lecturers to execute the teaching plan.

- Fully prepare textbooks, reference materials, and facilities to ensure the successful implementation of the program.

- Pay attention to the logic of transferring and acquiring knowledge areas, stipulate prerequisite and prior courses, and prepare lecturers to meet the teaching requirements of elective courses.

- Inspect and supervise the teaching activities of lecturers in accordance with the current Regulations on Teaching and ensure activities related to the innovation of teaching and assessment methods.

14.2. For Lecturers

- Lecturers must carefully study the content of the course syllabus to prepare suitable lectures, teaching methods, and teaching aids.

- Lecturers guiding research topics/dissertations must thoroughly understand the course syllabus and relevant regulations to prepare appropriate guidance content.

- Utilize diverse teaching and learning methods in line with the educational philosophy of "Active learning, creative working", and properly implement the testing and assessment methods specified in the course syllabus.

- Draw experiences from personal teaching activities and actively participate in activities to innovate teaching methods in accordance with the current Regulations on Teaching.

14.3. For Learners

- Must consult with academic advisors/homeroom teachers to select courses suitable for their orientation and learning capacity.

- Must ensure full attendance in class or participation in practical sessions as prescribed.

- Promote autonomy, the spirit of self-study and self-research, while actively participating in group learning, fully attending discussions, seminars, and practical sessions.

- Actively exploit online resources and the university's library to serve self-study, self-research, and dissertation writing.

- Strictly comply with the Regulations on Examinations, Testing, and Learning Assessment.

15. Approval of the Training Program

Ho Chi Minh City, 10th Aug. 2024
DEAN OF FACULTY

Signed √

Ho Chi Minh City, 1st Aug. 2024
HEAD OF FACULTY'S GRADUATE PROGRAM

Signed √

Ho Chi Minh City, 15st Aug. 2024
CHAIRMAN OF THE SCIENCE AND TRAINING COUNCIL

Signed √

Ho Chi Minh City, 19th Aug. 2024
RECTOR

Signed √

TABLE OF CONTENTS