MINISTRY OF INDUSTRY AND TRADE

HO CHI MINH CITY UNIVERSITY OF INDUSTRY AND TRADE

TRAINING PROGRAM

AUTOMATION AND CONTROL ENGINEERING TECHNOLOGY

Program name (Vietnamese): **CÔNG NGHỆ KỸ THUẬT ĐIỀU KHIỂN VÀ TỰ ĐỘNG HÓA**

Program name (English): **Automation and Control Engineering Technology**

Education level: Bachelor

Code: 7510303

Mode of study: Full time

Managing faculty: Faculty of Electrical and Electronic Engineering

TP. HỒ CHÍ MINH, NĂM 2024

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

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

TRAINING PROGRAM

(Issued under decision No: /QD-DCT dated / / 2024
by the Rector of Ho Chi Minh City University of Industry and Trade)

Program name (Vietnamese): CÔNG NGHỆ KỸ THUẬT ĐIỀU KHIỂN VÀ TỰ ĐỘNG HÓA

Program name (English): AUTOMATION AND CONTROL ENGINEERING TECHNOLOGY

Education level: Bachelor

Major: Automation and Control Engineering Technology

Major code: 7510303

Field of study: Engineering Technology

Mode of study: Full time

Quality accreditation information:

The Bachelor's program in Automation and Control Engineering Technology has met the educational quality standards issued by the Minister of Education and Training (MOET) since 2023.

1. Overview of Control Engineering and Automation Technology

Control Engineering and Automation Technology is a field of training and research focused on theoretical control methods and algorithms integrated with modern technical equipment to automate industrial production lines, management systems, and technological processes. Playing a pivotal role in the Fourth Industrial Revolution (Industry 4.0), this discipline contributes decisively to enhancing productivity, improving product quality, optimizing energy consumption, and ensuring operational safety. The program typically centers on two main areas of specialization: Automation of Industrial Processes (such as plant monitoring and management systems, supervisory control, and smart production lines) and Control of Automated Devices and Systems (such as robotics, robotic arms, and embedded systems).

Learners are equipped with a solid foundation of general knowledge in engineering mathematics, physics, introductory computer science, and specialized English. The core engineering knowledge base provides an essential foundation through courses such as: automatic control theory (linear and nonlinear), electronic engineering, digital

electronics, microprocessors and computer architecture, signals and systems, along with sensor and measurement technology. The general major curriculum dives deeper into the structure and operation of automated systems, including: programmable logic controllers (PLCs), applied power electronics, electric drives, pneumatic and hydraulic control systems, embedded systems, and industrial communication networks. On this basis, learners develop the capacity to analyze, design, program, operate, and integrate automation systems from single components to global scales.

Delving into specific concentrations, the Automatic Control pathway focuses heavily on courses such as: robotic engineering, intelligent control (fuzzy logic, neural networks, genetic algorithms), optimal control, and real-time embedded control systems. Meanwhile, the Process Automation pathway emphasizes the design and supervision of large-scale systems, including: supervisory control and data acquisition (SCADA) systems, distributed control systems, computer-integrated manufacturing, process control for the chemical, oil and gas, and cement industries, and smart energy management solutions.

In addition to classical control techniques, the field of Control Engineering and Automation Technology is currently integrating profound advancements from modern science. These include applying artificial intelligence and machine learning for predictive equipment maintenance, leveraging the Industrial Internet of Things to connect everything within the factory floor, and utilizing cloud computing and big data to optimize operational efficiency across the entire supply chain.

In the context of comprehensive digital transformation and the shift toward the "Smart Factory" model, the demand for highly skilled engineers in this field has become more urgent than ever, in both domestic and international markets. The educational program aims to produce experts who are not only proficient in practical skills and capable of mastering advanced technological equipment, but also possess systems thinking, the ability to research and develop new control algorithms, innovation capacity, and flexible adaptability to the continuous evolution of global technology.

Dưới đây là bản dịch tiếng Anh chuyên ngành và chuẩn xác cho phần "Cơ hội nghề nghiệp". Bản dịch sử dụng thuật ngữ chuẩn thường dùng trong các khung chương trình đào tạo quốc tế và hồ sơ năng lực (profile) ngành Kỹ thuật:

3. Career opportunities

Graduates can position themselves in various professional roles, including:

3.1. Engineering and design group

- Automation system design engineer: Designs construction drawings and schematic diagrams for electrical control systems; selects appropriate equipment (PLCs, inverters, sensors) for production lines.

- PLC/SCADA/DCS programming engineer: Develops control programs for programmable logic controllers (Siemens, Rockwell, Mitsubishi, etc.); designs HMI/SCADA supervisory interfaces and integrates distributed control systems for large-scale plants.
- Embedded systems and IoT engineer: Researches and develops smart control microcircuits; programs firmware for Industrial IoT devices or robotics.

3.2. Operations and production group

- System operations and maintenance engineer: Manages, monitors, and performs routine maintenance on automated production lines and industrial robots within processing and manufacturing plants.
- System Integration Engineer: Connects standalone machinery and robotic arms into a synchronized industrial communication network to optimize manufacturing processes.

3.3. Management and digital solutions group

- Smart factory solutions engineer: applies AI, Big data, and cloud computing to analyze overall equipment effectiveness, implement predictive maintenance, and digitalize operational workflows.
- Automation project manager: Plans, monitors schedules, manages budgets, and oversees technical specifications for installation and technology transfer projects.

3.4. Sales and technical services group

- Application nad technical support engineer: Provides technical consultancy and delivers tailored solutions based on the company's product portfolios to meet customer requirements.
- Automation equipment sales engineer: Acts as a commercial representative distributing high-end industrial equipment.

4. Program learning outcomes

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

Code	Program learning outcomes	Bachelor's proficiency level	Undergraduate competency level
a	**Knowledge**		
PLO1	Apply fundamental knowledge of natural and social sciences to the fields of electricity, electronics, control, and automation.	C3	C3

Code	Program learning outcomes	Bachelor's proficiency level	Undergraduate competency level
PLO2	Analyze electrical, electronic, automatic control, and automation systems based on a solid foundation of core and specialized engineering knowledge.	C4	
	Synthesize electrical, electronic, automatic control, and automation systems based on extensive core and specialized engineering knowledge.		C5
	Evaluate production lines and technological processes to synthesize plant-wide automatic control and automation systems.		C5
b	**Skills and personal attributes**		
PLO3	Accurately apply essential skills to resolve technical issues within the automation field.	P3	
	Proficiently perform complex skills to provide solutions for consultancy, design, operation, control, and maintenance in the automation sector.		P4
	Proficiently exercise analytical skills to provide consultancy and design solutions for automation and automatic control systems.		P4
PLO4	Properly execute self-learning, research, and knowledge discovery skills within the field of automation.	P3	P3
PLO5	Demonstrate the ability to cultivate personal attributes, professional ethics, and social responsibility within the automation industry.	A3	A3
c	**Interpersonal skills**		
PLO6	Proficiently apply dialogue, exchange, collaboration, organization, and teamwork implementation skills within the automation field.	P4	P4
PLO7	Proficiently apply communication and information exchange skills to support	P4	P4

Code	Program learning outcomes	Bachelor's proficiency level	Undergraduate competency level
	professional tasks in the electrical, electronic, and automation sectors.		
d	**Autonomy and responsibility**		
PLO8	Implement solutions that meet corporate needs and industrial requirements within the electrical, electronic, and automation sectors.	R4	R4
PLO9	Accurately execute planning, coordination, evaluation, and efficiency improvement of electrical, electronic, and automation activities.	P3	
	Masterfully organize, manage, and enhance the effectiveness of electrical, electronic, and automation operations.		P4

Note: Proficiency Levels (PL) in this table are measured based on the following frameworks: Knowledge (Bloom's Taxonomy - Cognitive domain); Behavioral Skills (Bloom's Taxonomy - Psychomotor domain); Affective Skills and Attitudes (Bloom's Taxonomy - Affective domain); and Competency Levels (Crawley's Proficiency Rating scale).

5. Learning workload

No.	Knowledge block	Learning workload	Percentage (%)
1	General education	30 credits	19.87 %
2	Engineering core	36 credits	23.84 %
3	Specialized (including enterprise semester knowledge scheduled for teaching in Semester 7)	55 credits	36.42 %
4	Advanced specialized	30 credits	19.87 %
Total cumulative credits		**151 credits**	**100%**

The above learning workload does not include physical education and national defense - security education.

6. Duration of training

Standard Program Duration: 4 years.

The advanced specialized program is implemented in two stages, awarding a Bachelor's Degree (Upon completion of stage 1 – Undergraduate level) and an Engineer's Degree (Upon completion of stage 2 – Advanced specialized level).

The maximum allowable time to complete the program includes the standard program duration and any permitted extensions as specified in the regulations on undergraduate training under the credit System (Issued under decision No. 3020/QĐ-DCT dated october 19, 2023, by the rector of Ho Chi Minh City University of Industry and Trade).

7. Graduation Diploma

A Bachelor's Degree is awarded when the learner completes Stage 1 (Undergraduate level) of the training program, accumulates the required number of credits, and meets all conditions for graduation eligibility and recognition as specified in the University's Regulations on Undergraduate Training under the Credit System.

An Engineer's Degree is awarded when the learner completes Stage 2 (Advanced specialized level) of the training program, accumulates the required number of credits, and meets all conditions for graduation eligibility and recognition as specified in the university's regulations on undergraduate training under the credit System.

8. Curriculum content

No.	**Course code**	**Internal code**	**Course title**	**Credits**	**Requirements** (Pre-course (a); Prerequisite (b); Co-requisite (c))
I. General education				**30**	
Compulsory General Education				**26**	
1.	0101100651	11200001	Philosophy of Marxism and Leninism	3 (3,0)	
2.	0101002298	11200002	Political economics of Marxism and Leninism	2 (2,0)	(a) 0101100651
3.	0101000476	11200003	Scientific socialism	2 (2,0)	(a) 0101002298
4.	0101006322	11200005	Ho Chi Minh’s ideology	2 (2,0)	(a) 0101100651
5.	0101001625	11200004	History of the communist party of Vietnam	2 (2,0)	(a) 0101100651
6.	0101003671	11200006	Genenal law	2 (2,0)	
7.	0101102246	14202001	English 1	2 (1,1)	
8.	0101102247	14202002	English 2	2 (1,1)	(a) 0101102246
9.	0101102248	14202003	English 3	2 (1,1)	(a) 0101102247
10.	0101006144	15200001	Advanced mathematics A1	3 (3,0)	

No.	Course code	Internal code	Course title	Credits	Requirements (Pre-course (a); Prerequisite (b); Co-requisite (c))
11.	0101006150	15200002	Advanced mathematics A2	2 (2,0)	
12.	0101003731	15200023	Scientific research methods	2 (2,0)	
13.	0101001703 0101001704 0101001705 0101001706 0101001707 0101001697	16201001	Physical education 1	2 (0,2)	Non-accumulated
14.	0101101334 0101001693 0101001694 0101001695 0101001696 0101001701	16201002	Physical education 2	2 (0,2)	Non-accumulated (a) 0101001703 (a) 0101001704 (a) 0101001705 (a) 0101001706 (a) 0101001707 (a) 0101001697
15.	0101001718 0101000929 0101001719 0101001702 0101000931 0101000930	16201003	Physical education 3	1 (0,1)	Non-accumulated (a) 0101101334 (a) 0101001693 (a) 0101001694 (a) 0101001695 (a) 0101001701 (a) 0101001696
16.	0101001657	16200004	National defense and security policy of the communist party of Vietnam	3 (3,0)	Non-accumulated (c) 0101001662 (c) 0101001669 (c) 0101001677
17.	0101001662	17300004	Defense and security work	2 (2,0)	Non-accumulated (a) 0101001657 (c) 0101001657 (c) 0101001669 (c) 0101001677
18.	0101001669	17301005	Defense and security education 3	1 (0,1)	Non-accumulated (a) 0101001657 (a) 0101001662 (c) 0101001657 (c) 0101001662 (c) 0101001677
19.	0101001677	17221002	Defense and security education 4	2 (0,2)	Non-accumulated (a) 0101001657 (a) 0101001662

No.	Course code	Internal code	Course title	Credits	**Requirements** (Pre-course (a); Prerequisite (b); Co-requisite (c))
					(a) 0101001669 (c) 0101001657 (c) 0101001662 (c) 0101001669
Elective General Education *(Select a minimum of 02 courses)*				**4**	
1.	0101003015	15200022	Introduction to logic	2 (2,0)	
2.	0101002400	07200444	Communication skills	2 (2,0)	
3.	0101006387	13200011	Corporate culture	2 (2,0)	
4.	0101100936	17200001	Innovation and entrepreneurship	2 (2,0)	
5.	0101006004	07200443	Vietnamese practice	2 (2,0)	
II. Core Engineering				**36**	
Compulsory Engineering Core				**32**	
1.	0101003128	02200027	Electric circuit 1	3 (3,0)	
2.	0101003131	02200062	Electric circuit 2	2 (2,0)	0101003128
3.	0101003121	02200063	Electromagnetic field theory	2 (2,0)	(a) 0101006144 (a) 0101006150
4.	0101001260	02200045	Basic electronics	3 (3,0)	(a) 0101003128
5.	0101005024	02201045	Basic electronics practice	2 (0,2)	(a) 0101003128 (a) 0101001260
6.	0101006562	02200002	Linear integrated circuits	2 (2,0)	(a) 0101001260
7.	0101002530	02200005	Measurement techniques	3 (3,0)	(a) 0101003128 (a) 0101001260
8.	0101005161	02201005	Measurement techniques practice	1 (0,1)	(a) 0101002530
9.	0101002877	02200047	Pulse and digital engineering	3 (3,0)	(a) 0101003128 (a) 0101001260
10.	0101005271	02201047	Pulse and digital circuits practice	2 (0,2)	(a) 0101002877
11.	0101100838	02200108	Technical english for electrical and electronics	2 (2,0)	
12.	0101000005	02200001	Electrical - electronic eafety	2 (2,0)	(a) 0101003128
13.	0101005019	02201101	Basic electricity practice	1 (0,1)	(a) 0101003128
14.	0101102808	02204008	Project 1 (*)	1 (0,1)	(a) 0101003128

No.	Course code	Internal code	Course title	Credits	**Requirements** (Pre-course (a); Prerequisite (b); Co-requisite (c))
					(a) 0101003131
15.	0101100944	01201250	Application of programming language in electricity and electrical industry	2 (0,2)	
16.	0101102809	02204010	Project 2 (*)	1 (0,1)	(a) 0101003128 (a) 0101003131 (a) 0101102808
Elective engineering core *(Select a minimum of 02 courses)*				**4**	
1.	0101000386	02201104	CAD in control engineering and automation	2 (0,2)	(a) 0101001260
2.	0101006429	02200067	Electrical and electronic materials	2 (2,0)	
3.	0101102134	03202550	Engineering drawing	2 (1,1)	
4.	0101101673	03200405	General mechanical engineering	2 (2,0)	
5.	0101007289	02200087	Signals and systems	2 (2,0)	
III. Major knowledge *(Stage 1 – Bachelor's Degree Awarded)*				**55**	
Compulsory major knowledge				**50**	
1.	0101006231	02200093	Electrical device	3 (3,0)	
2.	0101100841	02201093	Electrical device practice	2 (0,2)	(a) 0101006231
3.	0101100864	02200123	Modern control theory	3 (3,0)	(a) 0101003072
4.	0101003239	02200031	Electrical machines	3 (3,0)	(a) 0101003128
5.	0101007966	02201031	Electrical machines experimentation	2 (0,2)	(a) 0101003239
6.	0101003072	02200094	Automation control theory (*)	3 (3,0)	
7.	0101005040	02201094	Automation control practice	2 (0,2)	(a) 0101003072
8.	0101001274	02200007	Power electronics	3 (3,0)	(a) 0101003128
9.	0101005031	02201007	Power electronics practice	1 (0,1)	(a) 0101001274
10.	0101100843	02202002	Microcontrollers	3 (1,2)	(a) 0101002877
11.	0101100842	02202001	Programmable logic controller (*)	3 (1,2)	(a) 0101006231
12.	0101006249	02200036	Electric drives	2 (2,0)	(a) 0101003128

No.	Course code	Internal code	Course title	Credits	**Requirements** (Pre-course (a); Prerequisite (b); Co-requisite (c))
					(a) 0101003239
13.	0101102806	02206004	Graduation project (*)	6 (0,6)	(a) 0101102808 (a) 0101102809
14.	0101100851	02200111	Robot techniques	3 (3,0)	(a) 0101003072 (a) 0101100843
15.	0101007969	02200096	System modeling and simulation	2 (2,0)	(a) 0101003072
16.	0101007253	02201103	Practice of industrial line control	2 (0,2)	(a) 0101100842
17.	0101102807	02204026	Graduation internship (*)	4 (0,4)	
18.	0101000385	02200102	Internet of things	2 (2,0)	
19.	0101102810	02201102	Internet of things practice	1 (0,1)	
Elective major knowledge *(Select a minimum of 02 courses from Group A and a minimum of 02 courses from Group B)*				**5**	
Group A: Elective major knowledge *(Select a minimum of 01 course)*				**2**	
1.	0101100859	02201121	Image processing	2 (0,2)	(a) 0101100944
2.	0101001588	02201105	Measurement and control based on computer	2 (0,2)	(a) 0101100944
3.	0101100856	02201119	Embedded systems design	2 (0,2)	
4.	0101100866	02200124	Decentralized control theory	2 (2,0)	(a) 0101003072
Group B: Elective major knowledge *(Select a minimum of 01 course)*				**3**	
1.	0101102811	02202003	Advanced PLC	3 (1,2)	(a) 0101100842
2.	0101102824	02200147	Advanced electrical machine analysis	3 (3,0)	
3.	0101102823	02200148	Power electronics in photovoltaic and wind power systems.	3 (3,0)	(a) 0101001274
IV. Advanced and specialized major knowledge *(Stage 2 – Engineer's Degree Awarded)*				**30**	
Compulsory advanced and specialized major knowledge				**21**	
1.	0101001783	02200061	SCADA systems	2 (2,0)	(a) 0101100842
2.	0101003868	02200080	Efficient management and use of energy	2 (2,0)	
3.	0101003175	02200051	Industrial communication network	2 (2,0)	

No.	Course code	Internal code	Course title	Credits	Requirements (Pre-course (a); Prerequisite (b); Co-requisite (c))
4.	0101006307	02200024	Automation of technology process	2 (2,0)	(a) 0101003072
5.	0101006971	02200039	Equipment and automation system	2 (2,0)	(a) 0101003072 (a) 0101001274
6.	0101101777	02204023	Engineering internship (*)	8 (0,8)	
7.	0101102812	02203008	Engineer project (*)	3 (0,3)	
Elective advanced and specialized major knowledge *(Select a minimum of 03 courses)*				**9**	
1.	0101102813	02200149	Intelligent control system	3 (3,0)	(a) 0101003072
2.	0101102814	02200150	Advanced power electronics	3 (3,0)	
3.	0101102822	02200151	Renewable energy	3 (3,0)	
4.	0101102827	02200152	Smart grid	3 (3,0)	
5.	0101102815	02200153	Advanced control of electric machines	3 (3,0)	
Total theoretical credits (Excluding physical education and National defense-security education courses*)				**97**	
Total practical, internship, and graduation thesis credits (Excluding physical education and National defense-security education courses*)				**54**	
Total program credits (Excluding physical education and National defense-security education courses*)				**151**	

9. Training plan

No.	Course code	Internal code	Course title	Credits	Note
Semester 1: 11 Accumulated credits + 08 non-accumulated credits					
Compulsory courses				**11**	
1.	0101100651	11200001	Philosophy of Marxism and Leninism	3 (3,0)	
2.	0101006144	15200001	Advanced mathematics A1	3 (3,0)	
3.	0101005019	02201101	Basic electricity practice	1 (0,1)	
4.	0101003671	11200006	Genenal law	2 (2,0)	
5.	0101003731	15200023	Scientific research methods	2 (2,0)	
6.	0101001657	16200004	National defense and security policy of the communist party of Vietnam	3 (3,0)	Non-accumulated (c) 0101001662 (c) 0101001669

No.	Course code	Internal code	Course title	Credits	Note
					(c) 0101001677
7.	0101001662	17300004	Defense and security work	2 (2,0)	Non-accumulated (a) 0101001657 (c) 0101001657 (c) 0101001669 (c) 0101001677
8.	0101001669	17301005	Defense and security education 3	1 (0,1)	Non-accumulated (a) 0101001657 (a) 0101001662 (c) 0101001657 (c) 0101001662 (c) 0101001677
9.	0101001677	17221002	Defense and security education 4	2 (0,2)	Non-accumulated (a) 0101001657 (a) 0101001662 (a) 0101001669 (c) 0101001657 (c) 0101001662 (c) 0101001669
Semester 2: 18 Accumulated Credits + 02 Non-accumulated Credits					
Compulsory courses				**14**	
1.	0101002298	11200002	Political economics of Marxism and Leninism	2 (2,0)	(a) 0101100651
2.	0101003128	02200027	Electric circuit 1	3 (3,0)	
3.	0101100944	02201148	Application of programming language in electricity and electrical industry	2(0,2)	
4.	0101102246	14202001	English 1	2 (1,1)	
5.	0101001260	02200045	Basic electronics	3 (3,0)	(a) 0101003128
6.	0101006150	15200002	Advanced mathematics A2	2 (2,0)	
7.	0101001703 0101001704	16201001	Physical education 1	2 (0,2)	Non-accumulated

No.	Course code	Internal code	Course title	Credits	Note
	0101001705 0101001706 0101001707 0101001697				
Elective courses *(Select a minimum of 02 courses)*				**4**	
1.	0101003015	15200022	Introduction to logic	2 (2,0)	
2.	0101002400	07200444	Communication skills	2 (2,0)	
3.	0101006387	13200011	Corporate culture	2 (2,0)	
4.	0101100936	17200001	Innovation and Entrepreneurship	2 (2,0)	
5.	0101006004	07200443	Vietnamese practice	2 (2,0)	
Semester 3: 17 Accumulated Credits + 02 Non-accumulated Credits					
Compulsory courses				**17**	
1.	0101001625	11200004	History of the communist party of Vietnam	2 (2,0)	(a) 0101100651
2.	0101102247	14202002	English 2	2 (1,1)	(a) 0101102246
3.	0101003121	02200063	Electromagnetic field theory	2 (2,0)	(a) 0101006144 (a) 0101006150
4.	0101003131	02200062	Electric circuit 2	2 (2,0)	(a) 0101003128
5.	0101005024	02201045	Basic electronics practice	2 (0,2)	(a) 0101003128 (a) 0101001260
6.	0101006562	02200002	Linear integrated circuits	2 (2,0)	(a) 0101001260
7.	0101002877	02200047	Pulse and digital engineering	3 (3,0)	(a) 0101003128 (a) 0101001260
8.	0101000005	02200001	Electrical - electronic safety	2 (2,0)	(a) 0101003128
9.	0101101334 0101001693 0101001694 0101001695 0101001696 0101001701	16201002	Physical education 2	2 (0,2)	Non-accumulated (a) 0101001703 (a) 0101001704 (a) 0101001705 (a) 0101001706 (a) 0101001707 (a) 0101001697

No.	Course code	Internal code	Course title	Credits	Note
Semester 4: 20 accumulated credits + 01 non-accumulated credit					
Compulsory courses				**16**	
1.	0101102248	14200203	English 3	2 (1,1)	(a) 0101102247
2.	0101006231	02200093	Electrical device	3 (3,0)	
3.	0101002530	02200005	Measurement techniques	3 (3,0)	(a) 0101003128 (a) 0101001260
4.	0101005271	02201047	Pulse and digital circuits practice	2 (0,2)	(a) 0101002877
5.	0101003239	02200031	Electrical machines	3 (3,0)	(a) 0101003128
6.	0101100843	02202002	Microcontrollers	3 (1,2)	(a) 0101002877
7.	0101001718 0101100929 0101001719 0101001702 0101100931 0101100930	16201003	Physical education 3	1 (0,1)	Non-accumulated (a) 0101001693 (a) 0101101334 (a) 0101001695 (a) 0101001694 (a) 0101001701 (a) 0101001696
Elective courses *(Select a minimum of 02 courses from the following)*				**4**	
1.	0101000386	02201104	CAD in control engineering and automation	2 (0,2)	(a) 0101001260
2.	0101006429	02200067	Electrical and electronic materials	2 (2,0)	
3.	0101102134	03202550	Engineering drawing	2 (1,1)	
4.	0101101673	03200405	General mechanical engineering	2 (2,0)	
5.	0101007289	02200087	Signals and systems	2 (2,0)	
Semester 5: 21 accumulated credits + 00 non-accumulated credits					
Compulsory Courses				**21**	
1.	0101000476	11200003	Scientific socialism	2 (2,0)	(a) 0101002298
2.	0101100841	02201093	Electrical device practice	2 (0,2)	(a) 0101006231
3.	0101005161	02201005	Measurement techniques Practice	1 (0,1)	(a) 0101002530

No.	Course code	Internal code	Course title	Credits	Note
4.	0101102808	02204008	Project 1 (*)	1 (0,1)	(a) 0101003128 (a) 0101003131
5.	0101007966	02201031	Electrical machines experimentation	2 (0,2)	(a) 0101003239
6.	0101003072	02200094	Automation control theory (*)	3 (3,0)	
7.	0101001274	02200007	Power electronics	3 (3,0)	(a) 0101003128
8.	0101100842	02202001	Programmable logic controller (*)	3 (1,2)	(a) 0101006231
9.	0101006249	02200036	Electric drives	2 (2,0)	(a) 0101003128 (a) 0101003239
10.	0101000385	02200102	Internet of things	2 (2,0)	
Semester 6: 19 accumulated credits + 00 non-accumulated credits					
Compulsory Courses				**19**	
1.	0101006322	11200005	Ho Chi Minh's ideology	2 (2,0)	(a) 0101100651
2.	0101100864	02200123	Modern control theory	3 (3,0)	(a) 0101003072
3.	0101005040	02201094	Automation control practice	2 (0,2)	(a) 0101003072
4.	0101005031	02201007	Power electronics practice	1 (0,1)	(a) 0101001274
5.	0101102810	02201102	Internet of things practice	1 (0,1)	
6.	0101100838	02200108	Technical English for electrical and electronics	2 (2,0)	
7.	0101102809	02204010	Project 2 (*)	1 (0,1)	(a) 0101003128 (a) 0101003131 (a) 0101102808
8.	0101007969	02200096	System modeling and simulation	2 (2,0)	(a) 0101003072
9.	0101007253	02201103	Practice of industrial line control	2 (0,2)	(a) 0101100842
10.	0101100851	02200111	Robot techniques	3 (3,0)	(a) 0101003072 (a) 0101100843
Semester 7 (Corporate semester): **- 15 accumulated credits + 00 non-accumulated credits for completion of the Bachelor's degree program** **- Or 23 accumulated credits + 00 non-accumulated credits for completion of the Engineer's degree program**					
Compulsory Courses				**10**	
1.	0101102807	02204026	Graduation internship (*)	4 (0,4)	

No.	Course code	Internal code	Course title	Credits	Note
2.	0101102806	02206004	Graduation project (*)	6 (0,6)	(a) 0101102808 (a) 0101102809
Elective courses *(Select a minimum of 01 course from Group A and 01 course from Group B)*				**5**	
	Group A	***Select a minimum of 01 course***		**2**	
1.	0101100859	02201121	Image processing	2 (0,2)	(a) 0101100944
2.	0101001588	02201105	Measurement and control based on computer	2 (0,2)	(a) 0101100944
3.	0101100856	02201119	Embedded systems design	2 (0,2)	
4.	0101100866	02200124	Decentralized control theory	2 (2,0)	(a) 0101003072
	Group B	***Select a minimum of 01 course***		**3**	
1.	0101102811	02202003	Advanced PLC	3 (1,2)	(a) 0101100842
2.	0101102824	02200147	Advanced electrical machine analysis	3 (3,0)	
3.	0101102823	02200148	Power electronics in photovoltaic and wind power systems.	3 (3,0)	(a) 0101001274
Compulsory advanced and specialized major knowledge (Engineer's Degree Awarded)				**8**	
1.	0101003868	02200080	Efficient management and use of energy	2 (2,0)	
2.	0101003175	02200051	Industrial communication network	2 (2,0)	
3.	0101006307	02200024	Automation of technology process	2 (2,0)	(a) 0101003072
4.	0101006971	02200039	Equipment and automation system	2 (2,0)	(a) 0101003072 (a) 0101001274
Semester 8 (Advanced and specialized stage): 22 accumulated credits + 00 non-accumulated credits					
Compulsory Courses				**13**	
1.	0101001783	02200061	SCADA systems	2 (2,0)	(a) 0101100842
2.	0101101777	02204023	Engineering internship (*)	8 (0,8)	
3.	0101102812	02203008	Engineer project (*)	3 (0,3)	
Elective courses *(Select a minimum of 01 course)*				**9**	
1.	0101102813	02200149	Intelligent control system	3 (3,0)	(a) 0101003072
2.	0101102814	02200150	Advanced power electronics	3 (3,0)	
3.	0101102822	02200151	Renewable energy	3 (3,0)	

No.	Course code	Internal code	Course title	Credits	Note
4.	0101102827	02200152	Smart grid	3 (3,0)	
5.	0101102815	02200153	Advanced control of electric machines	3 (3,0)	

10. Admission Information

10.1. Admission Methods

1. Admission based on the National High School Graduation Examination results.

2. Admission based on High School Academic Records (Transcripts).

3. Admission based on the Competency Assessment Exam results organized by Vietnam National University - Ho Chi Minh City (VNU-HCM).

4. Direct Admission in accordance with the Undergraduate Admission Regulations of the Ministry of Education and Training (MoET).

5. Admission based on the Specialized Competency Assessment Exam results organized by Ho Chi Minh City University of Education, combined with High School Academic Records for the respective subject combinations of each major.

10.2. Subject Combinations for Admission

- A00: Mathematics, Physics, Chemistry
- A01: Mathematics, Physics, English
- C01: Literature, Mathematics, Physics
- D01: Mathematics, Literature, English

11. Approval of the training program

Ho Chi Minh City, 2024
CHAIRMAN OF THE ACADEMIC AND RESEARCH COUNCIL

Ho Chi Minh City, , 2024
DEAN OF THE FACULTY

Ho Chi Minh City, 2024
PRESIDENT