MINISTRY OF EDUCATION AND TRAINING
QUY NHƠN UNIVERSITY

PROGRAM

Level of education: **Undergraduate**

Major: **Automation and control Engineering**

Code: **7520216**

Type of education: **Full-time**

Gia Lai, 2025

MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

SOCIALIST REPUBLIC OF VIET NAM
Independence - Freedom - Happiness

PROGRAM

(Issued together with Decision No. 2178/QĐ-ĐHQN dated August 1, 2025 of the Rector of Quy Nhon University)

Level of education:	**Undergraduate**
Major:	**Automation and control engineering**
Code:	**7520216**
Type of education:	**Full-time**

1. PROGRAM OBJECTIVES (POs)

1.1. General objectives

The program trains engineers in Automation and Control Engineering with strong professional competence, good political and ethical qualities, good health, and solid expertise to effectively contribute to the sustainable development of the country, especially in the South Central Coast and Central Highlands regions. Graduates will possess professional knowledge, practical skills, a level of autonomy, and a digital competency framework; they will also have the ability to work in teams and apply and analyze issues related to electrical control and automation to meet the demands of the labor market in the digital environment both domestically and in the Southeast Asian region**.**

1.2. Specific objectives

- **PO1:** Possess knowledge of political theory, the guidelines and policies of the Party, and the laws and regulations of the State.
- **PO2:** Possess knowledge of basic sciences relevant to the field of Automation and Control Engineering in order to acquire and master fundamental disciplinary knowledge, thereby enabling the ability to learn and update new knowledge in the digital environment.
- **PO3:** Possess specialized knowledge in electrical engineering, electronics, automation systems, electric drives, mechatronics, programming, and control in order to adapt well to various jobs in the fields of control and automation and to pursue further studies at higher levels in the Industry 4.0 era.
- **PO4:** Possess communication skills, information technology skills, and the ability to use foreign languages in professional activities and career development in the digital environment.

- **PO5:** Possess the skills to analyze, design, and operate systems to solve practical problems in the field of automation and control engineering and to adapt to the continuous development of science and technology.
- **PO6:** Develop a digital competency framework to foster lifelong learning and research capacity; at the same time demonstrate professional ethics and responsibility toward work, the community, and society after graduation.

2. EMPLOYMENT OPPORTUNITIES AND FURTHER STUDY PROSPECTS

Graduates of the Automation and Control Engineering program can work in the following companies and factories:

- Work in areas such as smart grids, SCADA systems, measurement equipment, and calibration, as well as other related positions in power companies and provincial governmental departments.
- Work in the operation of control systems, improvement and proposal of equipment replacement solutions in thermal power plants, hydropower plants, solar power plants, wind power plants, and other power generation facilities.
- Work as technical staff responsible for design, operation, supervision, and maintenance of production lines in industrial manufacturing companies, production workshops, enterprises, testing and calibration centers, and scientific research centers.
- Work as engineers responsible for designing and assembling machinery for companies involved in control engineering, automation systems, automated manufacturing technologies, and intelligent production systems.
- Work as operators of Smart Home systems in commercial centers, hotels, buildings, Smart City systems, and smart agriculture applications.
- Start and operate their own businesses such as electrical system design consulting companies, solar energy companies, industrial automation installation and operation companies, component trading companies, automation solution providers, smart device trading and maintenance companies, and companies providing control software, remote monitoring solutions, and technologies related to AI and IoT.
- Work as lecturers or researchers at institutes, universities, colleges, and vocational schools in the fields of electrical engineering and automation.
- Continue pursuing Master's or Doctoral degrees in Automation and Control Engineering or related fields both domestically and internationally, such as Electrical Engineering, Electronic Engineering, Mechatronics, and related disciplines.

3. LEARNING OUTCOMES

Program Learning Outcomes (PLOs)

Program Learning Outcomes (PLOs)	Performance Indicators (PIs)
PLO1: Understand the fundamental knowledge of philosophy, Marxist–Leninist political economy, the history of the Communist Party of Vietnam, Ho Chi Minh Ideology, general law, physical education, and national defense and security in order to effectively address issues in professional activities and daily life.	PI1.1: Understand the basic knowledge of philosophy, Marxist–Leninist political economy, the history of the Communist Party of Vietnam, Ho Chi Minh Ideology, and general law.
	PI1.2: Understand training methods to maintain good physical fitness and health for future professional activities.
	PI1.3: Understand knowledge of national defense and security to effectively contribute to national protection in the new era.
PLO2: Apply fundamental scientific knowledge such as physics, mathematics, and engineering drawing as the foundation for core and specialized courses in Automation and Control Engineering.	PI2.1: Apply mathematical knowledge as a solid foundation for studying core and specialized courses.
	PI2.2: Apply knowledge of physics and engineering drawing as a solid foundation for studying core and specialized courses.
PLO3: Apply core disciplinary knowledge as the basis for calculation, selection, and design of control and automation systems.	PI3.1: Apply fundamental knowledge in electric drives and robotics to support calculations, selection, and design in control and automation systems.
	PI3.2: Apply fundamental knowledge in electrical and electronic engineering to support calculations, selection, and design in control and automation systems.
	PI3.3: Apply fundamental knowledge in programming and monitoring systems to support calculations, selection, and design in control and automation systems.

Program Learning Outcomes (PLOs)	Performance Indicators (PIs)
PLO4: Analyze specialized knowledge in Automation and Control Engineering, combined with the ability to utilize modern tools to participate in calculation, design, operation, and comparison of solutions in control systems, automation systems, electrical and electronic systems, programming, and monitoring, while considering techno-economic relationships.	PI4.1: Analyze knowledge of electric drives and robotics to support the field of automation and control in response to the Industry 4.0 revolution.
	PI4.2: Analyze knowledge of electrical and electronic engineering to support the field of automation and control in response to the Industry 4.0 revolution.
	PI4.3: Analyze knowledge of programming and monitoring systems to support the field of automation and control in response to the Industry 4.0 revolution.
PLO5: Integrate and evaluate core and specialized knowledge together with laboratory experiments, practical training, and real-world practice to propose solutions and transfer technologies related to the field of automation and control engineering.	PI5.1: Evaluate and analyze the design of control and automation systems.
	PI5.2: Apply experimental and practical knowledge to test, evaluate, and transfer technologies for control and automation systems.
PLO6: Apply supporting knowledge to contribute to the development of the field of automation and control engineering.	PI6.1: Apply communication and entrepreneurship skills to develop careers in automation and control engineering.
	PI6.2: Apply supporting knowledge in foreign languages and information technology to develop careers in automation and control engineering.
PLO7: Apply acquired knowledge to develop a personal digital competency framework in order to exploit and create information in the digital environment, thereby enhancing intellectual	PI7.1: Develop awareness of ethical thinking, professional responsibility, industrial working style, and work responsibility.

Program Learning Outcomes (PLOs)	Performance Indicators (PIs)
development, self-learning, and research capacity, while demonstrating professional ethics and responsibility in an integrated environment.	PI7.2: Develop self-learning awareness, responsibility for independent research, knowledge updating, and lifelong learning.
	PI7.3: Creatively exploit data, solve problems, and apply AI safely in the digital environment.

4. PROGRAM DURATION AND TOTAL CREDITS

4.1. Program Duration

The total duration of the program is 4.5 years.

4.2. Total credits: 150 Credits

Program structure	Credits
General Knowledge	**24**
Professional Knowledge	**126**
- Fundamental knowledge	54
- Specialized knowledge (if any)	56
- Internship	8
- Graduation Thesis	8
Total	**150**

5. ADMISSION REQUIREMENTS

According to the current admission regulations of Quy Nhon University.

6. TRAINING METHOD, GRADUATION REQUIREMENTS

6.1. Training Method

The program is delivered under the credit-based system.

6.2. Graduation Requirements:

- Academic requirements: Complete all courses and credit requirements of the program, and achieve a cumulative Grade Point Average (GPA) of 2.00 or higher for the entire program.
- Program learning outcomes: Meet all Program Learning Outcomes (PLOs) of the Automation and Control Engineering training program.
- Physical Education and National Defense–Security Education: Complete all Physical Education courses and obtain a National Defense and Security Education certificate in accordance with the regulations of Quy Nhon University.

- Foreign language requirement: Possess a foreign language certificate in accordance with the Vietnamese 6-level Foreign Language Proficiency Framework or an equivalent certificate as required by Quy Nhon University.
- Information Technology requirement: Possess a Basic Information Technology Application certificate or an equivalent certificate as required by Quy Nhon University.

7. TEACHING METHODS AND LEARNING ASSESSMENT

7.1 Teaching Methods

- Direct teaching:

Most theoretical courses are delivered through lectures, presentations, question–answer sessions, guiding questions, and assigned homework to students. Students' self-learning ability is assessed through assignments and discussions. The corresponding teaching methods include:

Lecturing

Guiding questions

Discussion

Problem posing

- Indirect teaching:

Some courses are delivered indirectly without clear intervention from the lecturer, such as course projects and graduation projects. The corresponding teaching methods include:

Open-ended questions

Idea development

Case studies

Problem solving

- Online teaching:

Some courses are delivered online for certain sessions without the physical presence of the lecturer. The corresponding teaching methods include:

Watching recorded lecture videos

Answering interactive questions and multiple-choice questions

Self-reading learning materials

Completing exercises, homework, and solved problems

- Experiential learning:

Several courses in the program are designed based on experiential learning, including practical and laboratory courses conducted in the university laboratories; specialized internships and graduation

internships at enterprises; course design projects and graduation design projects. The corresponding teaching methods include:

Models and simulations

Internship and field practice

Experiments

Design activities.

7.2 Learning Assessment

Continuous assessment and final examination are implemented in accordance with the university's general regulations.

8. PROGRAM CONTENT

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
I. General Knowledge (24TC)												
I.1. Political Science and Law *(13 TC)*												
1	1130299	Philosophy of Maxism Leninnism	2	3	40		10			100		DPESM
2	1130049	General law	2	2	27		6			67	1130299	DPESM
3	1130300	Political Economy of Marxism – Leninism	3	2	27		6			67	1130299	DPESM
4	1130301	Scientific socialism	4	2	27		6			67	1130300	DPESM
5	1130302	History of Communist Party of Vietnam	5	2	27		6			67	1130301	DPESM
6	1130091	Ho Chi Minh thought	6	2	27		6			67	1130302	DPESM
I.2. National Defense and Security Education *(12 TC)*												
7	1120168	National Defense and Security Education 1	4	3	37		8			105		CNDSE
8	1120169	National Defense and Security Education 2	4	2	22		8			70		CNDSE
9	1120170	National Defense and Security Education 3	4	2	14			16		78		CNDSE
10	1120171	National Defense and Security Education 4	4	2	4			56		68		CNDSE
11	1120172	Physical Education 1 (Football 1)	1	1	4			26		33		DPE

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
12	1120173	Physical Education 2 (Football 2)	2	1	4			26		33	1120172	DPE
13	1120174	Physical Education 3 (Football 3)	3	1	4			26		33	1120173	DPE
14	1120175	Physical Education 1 (Volleyball 1)	1	1	4			26		33		DPE
15	1120176	Physical Education 2 (Volleyball 2)	2	1	4			26		33	1120175	DPE
16	1120177	Physical Education 3 (Volleyball 3)	3	1	4			26		33	1120176	DPE
17	1120178	Physical Education 1 (Basketball 1)	1	1	4			26		33		DPE
18	1120179	Physical Education 2 (Basketball 2)	2	1	4			26		33	1120178	DPE
19	1120180	Physical Education 3 (Basketball 3)	3	1	4			26		33	1120179	DPE
20	1120181	Physical Education 1 (Badminton 1)	1	1	4			26		33		DPE
21	1120182	Physical Education 2 (Badminton 2)	2	1	4			26		33	1120181	DPE
22	1120183	Physical Education 3 (Badminton 3)	3	1	4			26		33	1120182	DPE
23	1120184	Physical Education 1 (Vietnamese Traditional Matial Arts 1)	1	1	4			26		33		DPE
24	1120185	Physical Education 2 (Vietnamese Traditional Matial Arts 2)	2	1	4			26		33	1120184	DPE
25	1120186	Physical Education 3 (Vietnamese Traditional Matial Arts 3)	3	1	4			26		33	1120185	DPE
26	1120187	Physical Education 1 (Taekwondo 1)	1	1	4			26		33		DPE
27	1120188	Physical Education 2 (Taekwondo 2)	2	1	4			26		33	1120187	DPE
28	1120189	Physical Education 3 (Taekwondo 3)	3	1	4			26		33	1120188	DPE
29	1120190	Physical Education 1 (Karatedo 1)	1	1	4			26		33		DPE
30	1120191	Physical Education 2 (Karatedo 2)	2	1	4			26		33	1120190	DPE
31	1120192	Physical Education 3 (Karatedo 3)	3	1	4			26		33	1120191	DPE
32	1120239	Physical Education 1 (Pickleball 1)	1	1	4			26		33		DPE

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
33	1120240	Physical Education 2 (Pickleball 2)	2	1	4			26		33	1120239	DPE
34	1120241	Physical Education 3 (Pickleball 3)	3	1	4			26		33	1120240	DPE
I.3. Foreign Languages *(7 TC)*										0		
35	1090061	English 1	1	3	37	8				105		DFL
36	1090166	English 2	2	4	52	8				140	1090061	DFL
I.4. Khoa học xã hội (4 TC)										0		
37	2030003	Communication Skills	1	2	20	5		10		70		DSSH
38	1150422	Startup	6	2	20	5	10			65		DFBA
II. Professional Knowledge								33		-16,5		
II.1. Fundamental Knowledge										0		
39	1010354	Linear Algebra	1	3	30	15				105		DMS
40	1010052	Analysis 1	1	3	30	15				105		DMS
41	1020162	General Physics 1	1	2	28		4			68		DNS
42	1160491	Autocad and Engineering drawing	1	3	35			20		105		DET
43	1160490	Basis informatics	2	3	30			30		105		DET
44	1010059	Analysis 2	2	3	34	11				105	1010052	DMS
45	1020163	General Physics 2	2	2	24	4	4			68	1020162	DNS
46	1020164	General Physics Experiment	2	1				30		35	1020163	DNS
47	1010129	Probability & Statistics	3	2	30					70		DMS
48	1160492	Control Mathematics	3	2	30					70		DET
49	1160493	Electric circuit theory	3	3	45					105		DET
50	1160651	Measurement and Sensors	3	2	30					70		DET
51	1160652	Industrial control equipment	3	2	30					70		DET
52	1160653	Electronic Circuits	3	3	45					105		DET
53	1160497	Electric circuit laboratory	4	1				30		35	1160493	DET
54	1160498	Automatic control theory	4	3	45				x	105	1160492	DET
55	1160499	English for Automation and Control Engineering	4	2	30					70	1090166	DET
56	1160028	Power electronics	4	3	45					105		DET
57	1160654	Electrical safety	4	2	30					70		DET

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental, Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
58	1160821	Measurement and Electronic Circuits Experiment	4	1				30		35	1160651	DET
59	1160657	Microcontroller	4	2	30					70		DET
60	1160495	Electric machines	5	3	45					105		DET
61	1160502	Electronics Trade Practice	5	1				30		35		DET
62	1160822	Power electronics and Electrical machines laboratory	5	1				30		35	1160028	DET
63	1160658	Microcontroller Practice	5	1				30		35	1160657	DET
II.2 Specialized knowledge *(56 TC)*				*54*						2700		
II.2.1. Compulsory (44 TC)										0		
64	1160659	Electrical equipment	4	2	30					70		DET
65	1160660	Electrical equipment Practice	5	1	0			30		35	1160659	DET
66	1160661	PLC Programming	5	3	45					105		DET
67	1160662	Arduino Application Circuit	5	2	30					70		DET
68	1160663	Industrial Robots	5	2	30					70		DET
69	1160664	Power Supply System	5	3	30	15				105		DET
70	1160665	Hydraulic and Pneumatic control	6	2	30					70		DET
71	1160614	Advanced Automatic Control	6	2	30					70	1160498	DET
72	1160666	PLC Programming Practice	6	1				30		35	1160661	DET
73	1160032	Electric drives	6	3	45					105		DET
74	1160837	Electrical Power Supply project	6	1					x	50		DET
75	1160823	Industrial Robots and Electric drives Practice	6	1				30		35	1160663	DET
76	1160668	Embedded Systems And IoT	6	2	30					70		DET
77	1160669	Embedded Systems And IoT Practice	6	1				30		35		DET
78	1160670	Data transmission and network computer	7	2	30					70		DET
79	1160506	Digital Control Systems	7	2	30					70	1160498	DET
80	1160824	Hydraulic – Pneumatic and CNC Practice	7	1				30		35	1160665	DET
81	1160672	Network of Industry and SCADA	7	2	30					70		DET

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental, Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
82	1160531	Automatic Project	7	1					x	50		DET
83	1160673	CNC Engineering	7	2	30					70		DET
84	1160674	IoT Industry and SCADA Practice	8	1				30		35	1160672	DET
85	1160675	Robot projects	8	1					x	50		DET
86	1160676	Application Software design	8	2	30					70		DET
87	1160677	Special subject in Control and Automation	8	2	30					70		DET
88	1160616	Database System	8	2	24			12		70		DET
II.2.2 Optional: (12/26TC)				*44*						2200		
89	1160679	Signal Digital Processing	7	2	25			10		70		DET
90	1160622	Mobile Robot	7	2	25			10		70		DET
91	1160680	Building Engineering Systems	7	2	25			10		70		DET
92	1160524	Automatic control of Electric drive systems	7	2	25			10		70		DET
93	1160536	IC Design	7	2	25			10		70		DET
94	1160532	Renewable Energy	8	2	25			10		70		DET
95	1160681	Applications of AI in Robots	8	2	25			10		70		DET
96	1160533	Speech and Image Processing	8	2	25			10		70		DET
97	1160528	Automation of Production Process	8	2	25			10		70		DET
98	1160620	Smart Grid	8	2	25			10		70		DET
99	1160525	Mechatronics	8	2	25			10		70		DET
100	1160535	Distributed Control System	8	2	25			10		70		DET
101	1160682	Neural network	8	2	25			10		70		DET
II.3. Internships (8TC)												
102	1160607	Cognitive apprenticeship	3	2					x	100		DET
103	1160526	Automation and Control Engineering Practicum	7	2					x	100		DET
104	1160630	Graduation Internship in Control and Automation Engineering	9	4					x	200		DET
II.4. Graduation Thesis*: (8 TC)*												
105	1160539	Graduation Thesis	9	8					x	400		DET

Note: (*) – Prerequisite course

CNDSE	*Center for National Defense and Security Education*
DET	*Department of Engineering and Technology*
DFBA	*Department of Finance and Business Administration*
DFL	*Department of Foreign Languages*
DMS	*Department of Mathematical Sciences*
DNS	*Department of Natural Sciences*
DPE	*Department of Physical Education*
DPESM	*Department of Political Education and Scientific Marxism*
DSSH	*Department of Social Sciences and Humanities*
Others	*Internship, Field Practice, or Project*

9. TENTATIVE TEACHING PLAN

Semester 1

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental/ Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
Choose one of the following seven physical education courses*:*												
1	1120172	Physical Education 1 (Football 1)	1	1	4			26		33		DPE
2	1120175	Physical Education 1 (Volleyball 1)	1	1	4			26		33		DPE
3	1120178	Physical Education 1 (Basketball 1)	1	1	4			26		33		DPE
4	1120181	Physical Education 1 (Badminton 1	1	1	4			26		33		DPE
5	1120184	Physical Education 1 (Vietnamese Traditional Matial Arts 1)	1	1	4			26		33		DPE
6	1120187	Physical Education 1 (Taekwondo 1)	1	1	4			26		33		DPE
7	1120190	Physical Education 1 (Karatedo 1)	1	1	4			26		33		DPE
8	1120239	Physical Education 1 (Pickleball 1)	1	1	4			26		33		DPE
9	1090061	English 1	1	3	37	8				105		DFL

10	2030003	Communication Skills	1	2	18		4	20		68		DSSH
11	1010354	Linear Algebra	1	3	30	15				105		DMS
12	1010052	Analysis 1	1	3	30	15				105		DMS
13	1020162	General Physics 1	1	2	28		4			68		DNS
14	1160491	Autocad and Engineering drawing	1	3	35			20		105		DET
Total				16	178	38	8	40	0	556		

Semester 2

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
Choose one of the following seven physical education courses:												
1	1120173	Physical Education 2 (Football 2)	2	1	4			26		33	1120172	DPE
2	1120176	Physical Education 2 (Volleyball 2)	2	1	4			26		33	1120175	DPE
3	1120179	Physical Education 2 (Basketball 2)	2	1	4			26		33	1120178	DPE
4	1120182	Physical Education 2 (Badminton 2	2	1	4			26		33	1120181	DPE
5	1120185	Physical Education 2 (Vietnamese Traditional Matial Arts 2)	2	1	4			26		33	1120184	DPE
6	1120188	Physical Education 2 (Taekwondo 2)	2	1	4			26		33	1120187	DPE
7	1120191	Physical Education 1 (Karatedo 2)	2	1	4			26		33	1120190	DPE
8	1120240	Physical Education 2 (Pickleball 2)	2	1	4			26		33	1120239	DPE
9	1130299	Philosophy of Maxism Leninnism	2	3	40		10			100		DPESM
10	1130049	General law	2	2	27		6			67	1130299	DPESM
11	1090166	English 2	2	4	52	8				140	1120191	DFL
12	1160490	Basis informatics	2	3	30			30		105		DET
13	1010059	Analysis 2	2	3	34	11				105	1120188	DMS
14	1020163	General Physics 2	2	2	24	4	4			68	1120191	DNS

15	1020164	General Physics Experiment	2	1				30		35	1020163	DNS
Total				18	207	23	20	60	0	620		

Semester 3

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
Choose one of the following seven physical education courses:												
1	1120174	Physical Education 3 (Football 3)	3	1	4			26		33	1120173	DPE
2	1120177	Physical Education 3 (Volleyball 3)	3	1	4			26		33	1120176	DPE
3	1120180	Physical Education 3 (Basketball 3)	3	1	4			26		33	1120179	DPE
4	1120183	Physical Education 3 (Badminton 3	3	1	4			26		33	1120182	DPE
5	1120186	Physical Education 3 (Vietnamese Traditional Matial Arts 3)	3	1	4			26		33	1120185	DPE
6	1120189	Physical Education 3 (Taekwondo 3)	3	1	4			26		33	1120188	DPE
7	1120192	Physical Education 3 (Karatedo 3)	3	1	4			26		33	1120191	DPE
8	1120241	Physical Education 3 (Pickleball 3)	3	1	4			26		33	1120240	DPE
9	1130300	Political Economy of Marxism – Leninism	3	2	27		6			67	1020163	DPESM
10	1010129	Probability & Statistics	3	2	30					70		DMS
11	1160492	Control Mathematics	3	2	30					70		DET
12	1160493	Electric circuit theory	3	3	45					105		DET
13	1160651	Measurement and Sensors	3	2	30					70		DET
14	1160652	Industrial control equipment	3	2	30					70		DET
15	1160653	Electronic Circuits	3	3	45					105		DET

16	1160607	Cognitive apprenticeship	3	2					x	100		DET
Toal				18	237	0	6	0	0	657		

Semester 4

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
1	1130301	Scientific socialism	4	2	27		6			67	1160607	DPESM
2	1120168	National Defense and Security Education 1	4	3	37		8			105		CNDSE
3	1120169	National Defense and Security Education 2	4	2	22		8			70		CNDSE
4	1120170	National Defense and Security Education 3	4	2	14			16		78		CNDSE
5	1120171	National Defense and Security Education 4	4	2	4			56		68		CNDSE
6	1160497	Electric circuit laboratory	4	1				30		35	1120168	DET
7	1160498	Automatic control theory	4	3	45				x	105	1130301	DET
8	1160499	English for Automation and Control Engineering	4	2	30					70	1090166	DET
9	1160028	Power electronics	4	3	45					105		DET
10	1160654	Electrical safety	4	2	30					70		DET
11	1160821	Measurement and Electronic Circuits Experiment	4	1				30		35	1120169	DET
12	1160657	Microcontroller	4	2	30					70		DET
13	1160659	Electrical equipment	4	2	30					70		DET
Total				**18**	**212**	**2**	**2**	**62**	**2**	**562**		

Semester 5

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					

1	1130302	History of Communist Party of Vietnam	5	2	27		6			67	1160659	DPESM
2	1160495	Electric machines	5	3	45					105		DET
3	1160502	Electronics Trade Practice	5	1				30		35		DET
4	1160822	Power electronics and Electrical machines laboratory	5	1				30		35	1160655	DET
5	1160658	Microcontroller Practice	5	1				30		35	1130302	DET
6	1160660	Electrical equipment Practice	5	1	0			30		35	1160659	DET
7	1160661	PLC Programming	5	3	45					105		DET
8	1160662	Arduino Application Circuit	5	2	30					70		DET
9	1160663	Industrial Robots	5	2	30					70		DET
10	1160664	Power Supply System	5	3	45				x	105		DET
Total				**19,0**	**222,0**	-	**6,0**	**120,0**	**-**	**662,0**		

Semester 6

No	Course Code	Course Name	Semeste	Numbe of credit	Class duration			Experin ental/ Pratica	Others	Self-study time	Prerequisite Course Code	Managing Faculty
					Theo ry	Exerci ses	Disc ussio ns					
1	1130091	Ho Chi Minh thought	6	2	27		6			67	1160664	DPESM
2	1150422	Startup	6	2	20	5	5		5	70		DFBA
3	1160665	Hydraulic and Pneumatic control	6	2	30					70		DET
4	1160614	Advanced Automatic Control	6	2	30					70	1160498	DET
5	1160666	PLC Programming Practice	6	1				30		35	1160661	DET
6	1160032	Electric drives	6	3	45					105		DET
7	1160837	Electrical Power Supply project	6	1					x	50		DET
8	1160823	Industrial Robots and Electric drives Practice	6	1				30		35	1160663	DET
9	1160668	Embedded Systems And IoT	6	2	30					70		DET
10	1160669	Embedded Systems And IoT Practice	6	1				30		35		DET

Total		**17,0**	**182,0**	**5,0**	**11,0**	**90,0**	**5,0**	**607,0**		

Semester 7

No	Course Code	Course Name	Semeste	Numbe of credit	Class duration			Experimental Pratica	Other	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
Required knowledge												
1	1160670	Data transmission and network computer	7	2	30					70		DET
2	1160506	Digital Control Systems	7	2	30					70		DET
3	1160824	Hydraulic – Pneumatic and CNC Practice	7	1				30		35	1160665	DET
4	1160672	Network of Industry and SCADA	7	2	45					55		DET
5	1160531	Automatic Project	7	1					x	50		DET
6	1160673	CNC Engineering	7	2	30					70		DET
7	1160526	Automation and Control Engineering Practicum	7	2					x	100		DET
Compulsory (4/10TC)												
8	1160679	Signal Digital Processing	7	2	25			10		70		DET
9	1160622	Mobile Robot	7	2	25			10		70		DET
10	1160680	Building Engineering Systems	7	2	25			10		70		DET
11	1160524	Automatic control of Electric drive systems	7	2	25			10		70		DET
12	1160536	IC Design	7	2	25			10		70		DET
Total				**16,0**	**185,0**	**-**	**-**	**50,0**	**-**	**590,0**		

Semester 8

No	Course Code	Course Name	Semeste	Numbe of credit	Class duration			Experimental Pratica	Other	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					

Required knowledge												
1	1160674	IoT Industry and SCADA Practice	8	1				30		35	1160672	DET
2	1160675	Robot projects	8	1					x	50		DET
3	1160676	Application Software design	8	2	30					70		DET
4	1160677	Special subject in Control and Automation	8	2	30					70		DET
5	1160616	Database System	8	2	24			12		70		DET
Compulsory (8/16TC)										0		
6	1160532	Renewable Energy	8	2	25			10		70		DET
7	1160681	Applications of AI in Robots	8	2	25			10		70		DET
8	1160533	Speech and Image Processing	8	2	25			10		70		DET
9	1160528	Automation of Production Process	8	2	25			10		70		DET
10	1160620	Smart Grid	8	2	25			10		70		DET
11	1160525	Mechatronics	8	2	25			10		70		DET
12	1160535	Distributed Control System	8	2	25			10		70		DET
13	1160682	Neural network	8	2	25			10		70		DET
Tổng cộng				**16,0**	**184,0**	**-**	**-**	**82, 0**	**-**	**575,0**		

Semester 9

No	Course Code	Course Name	Semeste	Numbe of credit	Class duration			Exper mental Pratica	Other	Self-study time	Prerequisite Course Code	Managing Faculty
					Theory	Exercises	Discussions					
1	1160630	Graduation Internship in Control and Automation Engineering	9	4					x	200		DET
2	1160539	Graduation Thesis	9	8					x	400		DET
Total				**12,0**	**-**	**-**	**-**	**-**	**-**	**600,0**		

10. GUIDELINES FOR PROGRAM IMPLEMENTATION

- This curriculum is implemented from the academic year 2025–2026 for students majoring in Control Engineering and Automation.
- The training process is based on the designed curriculum, educational objectives, target learners, workforce requirements, and specific training demands. For elective courses, depending on practical conditions, development trends, and social demands, the Program Director will advise students in selecting appropriate courses.
- The Head of the Department is responsible for organizing and guiding the principles for developing detailed course syllabi to ensure that the objectives, contents, and requirements are fully met, while also satisfying the needs of learners and society.
- The curriculum is periodically reviewed and updated in accordance with practical conditions to meet the development of the field of Control Engineering and Automation and to align with socio-economic development needs.

Gia Lai, July 22, 2025

DEAN OF FACULTY	***HEAD OF TRAINING OFFICE***	***BY THE DELEGATION OF THE RECTOR VICE-RECTOR***
Dr. Tran Thanh Thai	**Dr. Le Xuan Vinh**	**Dr. Đinh Anh Tuan**