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PROGRAMME SPECIFICATION

Training major: **AUTOMATION AND CONTROL ENGINEERING TECHNOLOGY**

Training level: Engineer

Major code: 7.51.03.03

Date revised: October 2021

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1. Awarding institution: Lac Hong University

2. Name of the final award: Automation and Control Engineering Technology

3. Training form: Full time

4. Training time: 4 years

The normal period of study for a full-time engineering degree is four years and the maximum period is eight years.

5. Admission criteria

High school graduate candidates have a total mark of Mathematics, Physics and Chemistry (group A); or Mathematics, Physics and English (group A1); or Mathematics, Literature and English (group D1) in an annual National High School Graduation Examination held in July by MOET higher than the entrance mark set by the LHU based on the student admission quota from MOET. The entrance mark will be published in August.

6. Program educational objectives (PEO)

The objectives of the Automation and Control Engineering Technology (ACET) program are that most graduates within 2 to 3 years will:

- PEO1: Flexibly apply soft skills and specialized knowledge in research, manufacture, operate and produce in a multinational environment.;
- PEO2: Design and improve automation processes to meet modern production requirements;
- PEO3: Self-improvement in a lifelong professional field;

7. Program Learning Outcomes (PLOs)

After successful completion of the ACET program, graduates will be able to attain the following PLOs:

- PLO1: An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the ACET;
- PLO2: An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the ACET;
- PLO3: An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- PLO4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
- PLO5: An ability to function effectively as a member as well as a leader on technical teams;

8. Program structures

The program structure comprises of the following 8 semesters.

Code	Courses	Credit number				Hours	Note
		Total credit	Theory	Practice	Exercise		
	National defense education					165	
102014	General informatics	3	2	1	0	75	
102016	Advanced mathematics A1	3	2	0	1	60	
102055	English 1	2	2	0	0	30	
115069	Introduction to ACET	3	3	0	0	45	
115060	Sensors and measurement techniques	3	3	0	0	45	
116068	Electrical fundamentals practice	1	0	1	0	45	
115061	Sensors and measurement techniques practice	2	0	1	1	75	
114051	Electronics fundamentals	3	3	0	0	45	
	Total 1st semester	**20**	**15**	**3**	**2**	**420**	
102018	Advanced mathematics A2	4	4	0	0	60	
102067	General physics	2	1	1	0	60	
102068	English 2	3	3	0	0	45	
116069	Electrical Engineering	3	3	0	0	45	
116009	Pneumatic and hydraulics technology	3	3	0	0	45	
115080	Electrical control panel practice	2	0	1	1	75	
115054	Servo control system	3	3	0	0	45	
115052	Automation project 1	1	0	0	1	30	
115063	Mechanical theory	3	3	0	0	45	
	Total 2nd semester	**24**	**20**	**2**	**2**	**450**	
102002	Physical Education 1	0	0	0	0	30	

102069	English 3	3	3	0	0	45	
115026	PLC programming	3	3	0	0	45	
115076	Automation control system	3	3	0	0	45	
115066	PLC programming practice	2	0	1	1	75	
115078	CAD for electrical control panel design	2	1	0	1	45	
114050	Digital systems	3	3	0	0	45	
115028	English for ACET	3	3	0	0	45	
116010	Fundamentals of machine elements	4	4	0	0	60	
	Total 3rd semester	**23**	**20**	**1**	**2**	**405**	
102003	Physical Education 2	0	0	0	0	30	
102063	Marxist - Leninist philosophy	3	3	0	0	45	
102064	Marxist - Leninist political economics	2	2	0	0	30	
102065	Scientific socialism	2	2	0	0	30	
102070	English 4	3	3	0	0	45	
115062	Technical programming	3	3	0	0	45	
115032	Advanced PLC programming	3	3	0	0	45	
115050	Advanced PLC programming practice	1	0	1	0	45	
115053	Automation project 2	1	0	0	1	30	
Elective courses (Select 1 in 2 courses)							
115075	Piping diagrams PFD and P&ID	3	2	0	1	60	
116051	Computer-aided design techniques						
	Total 4th semester	**21**	**18**	**1**	**2**	**375**	
102004	Physical Education 3	0	0	0	0	30	
102071	English 5	3	3	0	0	45	
115070	Motion Control	4	4	0	0	60	
102006	Viet Nam general law	2	2	0	0	30	
115064	Microcontroller	4	4	0	0	60	
115071	Computer interfacing and control	3	3	0	0	45	
115021	Microcontroller practice	2	1	1	0	60	
Elective courses (Select 1 in 2 courses)							
116062	Industrial robot	3	3	0	0	45	
115040	SCADA systems						
	Total 5th semester	**21**	**20**	**1**	**0**	**345**	

102033	Ho Chi Minh' theory	2	2	0	0	30	
102072	English 6	3	3	0	0	45	
115059	Advanced microcontroller	2	1	0	1	45	
115014	Advanced microcontroller practice	1	0	1	0	45	
115036	Digital data transmission network	2	1	0	1	45	
116063	Internship 1	2	2	0	0	30	
115038	Automation technology project	1	0	0	1	30	
Elective courses (Select 1 in 2 courses)							
115057	Modeling and simulation of automation systems	3	3	0	0	45	
115067	Modular flexible manufacturing system (FMS)						
	Total 6th semester	**16**	**12**	**1**	**3**	**315**	
102066	History of Vietnamese communist party	2	2	0	0	30	
115074	Database Management Programming	4	4	0	0	60	
115072	Project management techniques	3	3	0	0	45	
115073	IoT programming	3	3	0	0	45	
116049	Industrial maintenance	2	1	0	1	45	
Elective courses (Select 1 in 2 courses)							
115068	Kaizen-TPM	3	3	0	0	45	
115077	Mechanical and electrical systems						
	Total 7th semester	**17**	**16**	**0**	**1**	**270**	
116067	Internship 2	2	2	0	0	30	
66666	Graduation project	10	10	0	0	150	
	Total 8th semester	**12**	**12**	**0**	**0**	**180**	
	Total	**154**	**133**	**9**	**12**	**2760**	

9. Progression points

Students must obtain a mark of 5.0 (scale of 10.0) for all courses. In cases, the students fail to accumulate a GPA (Grade Point Average) of 3.0 for the first year, 3.5 for the second year, 4.0 for the third year, or 4.5 from the fourth year or over allowable study time, they will be required to withdraw from the program.

10. Special features

- The ACET has the technical playgrounds (e.g., installing electricity cabinets, installing PLC cabinets, technology transfer activities, ROBOCON contest, Maker to Entrepreneur (MEP), Creative Idea Challenge (CIC), National Entrepreneurship, Provincial Entrepreneurship, Engineering Projects in Community Service (EPICS), Science and Technology Innovation, etc.).

The results of the competition are proposed to evaluate some courses such as automation projects 1, 2, and graduation projects.

- Besides the extra-curricular activities in the program, students have some special co-curricular activities such as sightseeing factory, 2 internships at the company to help students obtain experience working at the company as well as enhance their practical skills and practice the knowledge learned.

- Students are strengthened knowledge, skills, and attitudes through modern teaching and learning activities such as project-based learning and competition-based learning.

11. Job opportunities

Graduates of the ACET training program have the potential to work in the following areas:

✓ Working at domestic and foreign companies in the fields of control and automation.

✓ Ability to consult, and provide solutions in the field of automation.

✓ Ability to learn in advance to become a lecturer, manager, technical expert, etc.

✓ Ability to startup.

1. Date of issue and revision

The program was issued in July 2021 and revised in October 2021.