PROGRAMME SPECIFICATION

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

Training level: Engineer

Major code: 7.51.03.03

Date revised: October 2019

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 iseight 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 arethat 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	
115048	Introduction to ACET	2	2	0	0	30	
115001	Sensors and measurement techniques	2	1	0	1	45	
114008	Electrical fundamentals practice	1	0	1	0	45	
115002	Sensors and measurement techniques practice	1	0	1	0	45	
102055	English 1	2	2	0	0	30	
Total 1st semester		**14**	**9**	**3**	**2**	**330**	
102018	Advanced mathematics A2	4	4	0	0	60	
102036	General physics	3	3	0	0	45	
102056	English 2	2	1	0	1	45	
116052	Electrical Engineering	2	1	0	1	45	
116009	Pneumatic and hydraulics technology	2	1	0	1	45	
114034	Electrical equipment	3	3	0	0	45	
115052	Automation project 1	1	0	0	1	30	
115030	Mechanical theory	2	1	0	1	45	
Total 2nd semester		**19**	**14**	**0**	**5**	**360**	
102002	Physical Education 1	1	0	0	1	30	

102069	English 3	2	1	0	1	45	
113005	Electronics fundamentals	2	1	0	1	45	
115024	Automation control system	2	1	0	1	45	
115054	Servo Control System	3	3	0	0	45	
114025	Electrical equipment practice	2	1	1	0	60	
113009	Digital systems	2	1	0	1	45	
116010	Fundamentals of machine elements	4	4	0	0	60	
Total 3rd semester		**18**	**12**	**1**	**5**	**375**	
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	
102058	English 4	2	1	0	1	45	
102003	Physical Education 2	1	0	0	1	30	
115004	Microcontroller	3	2	0	1	60	
115026	PLC programming	3	3	0	0	45	
115053	Automation project 2	1	0	0	1	30	
115029	PLC1 programming practice	1	0	1	0	45	
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**	**15**	**1**	**5**	**420**	
115028	English for ACET	3	3	0	0	45	
102004	Physical Education 3	1	0	0	1	30	
102006	Viet Nam general law	2	2	0	0	30	
115003	Technical programming	2	1	0	1	45	
115031	Advanced microcontroller	3	2	0	1	60	
115034	PLC2 programming practice	1	0	1	0	45	
115032	Advanced PLC programming	3	3	0	0	45	
115021	Microcontroller practice	2	1	1	0	60	
Elective courses (Select 1 in 2 courses)							
116037	Industrial robot	2	1	0	1	45	
115033	Modular flexible manufacturing system (FMS)						
Total 5th semester		**19**	**13**	**2**	**4**	**405**	

102033	Ho Chi Minh' theory	2	2	0	0	30	
102059	English 5	2	1	0	1	45	
115050	Advanced PLC practice	1	0	1	0	45	
115014	Advanced microcontroller practice	1	0	1	0	45	
115036	Digital data transmission network	2	1	0	1	45	
115037	Computer interfacing and control	2	1	0	1	45	
115038	Automation technology project	1	0	0	1	30	
116055	Internship 1	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		**15**	**8**	**2**	**5**	**360**	
102066	History of Vietnamese communist party	2	2	0	0	30	
102060	English 6	2	1	0	1	45	
115041	Database Management Programming	3	2	0	1	60	
115044	Project management techniques	2	1	0	1	45	
115043	IoT programming	2	1	0	1	45	
116049	Industrial maintenance	2	1	0	1	45	
Elective courses (Select 1 in 2 courses)							
115045	Kaizen-TPM	2	1	0	1	45	
115046	Mechanical and electrical systems						
Total 7th semester		**15**	**9**	**0**	**6**	**315**	
116067	Internship 2	1	0	0	1	30	
66666	Graduation project	10	10	0	0	150	
Total 8th semester		**11**	**10**	**0**	**1**	**180**	
Total		**132**	**90**	**9**	**33**	**2745**	

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 2019 and revised in October 2019.