# CURRICULUM MAJOR: ELECTRICAL AND ELECTRONICS ENGINEERING TECHNOLOGY

(Issued under Decision No. 2454/QĐ-DCT dated October 10, 2020,
by the Rector of Ho Chi Minh City University of Food Industry)

## 1. INSTITUTIONAL IDENTIFICATION AND PROGRAM OVERVIEW

- **Program Name (Vietnamese):** Công nghệ kỹ thuật điện, điện tử
- **Program Name (English):** Electrical and Electronics Engineering Technology
- **Training Level:** Undergraduate
- **Program Code:** 7510301
- **Training Type:** Full-time; Work-study
- **Managing Faculty:** Electrical and Electronics Engineering Technology
- **Issuance Date:** 2020 (Issued under Decision No. 2454/QĐ-DCT)

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## 2. TRAINING OBJECTIVES

**2.1. General Objectives** To train human resources with good moral qualities and applied thinking capabilities in the field of Electrical and Electronics Engineering Technology to meet the requirements of socio-economic development, national defense, security, and international integration.

**2.2. Specific Objectives** Graduates shall possess the following knowledge, skills, autonomy, and responsibility:

### a. Knowledge

- Application of basic knowledge in social sciences, natural sciences, politics, law, and information technology.
- Specialized knowledge in the field of Electrical and Electronics Engineering Technology.

### b. Skills

- Creative thinking skills, professional skills, and communication skills to solve applied problems related to the electrical and electronic sectors.

### c. Autonomy and Responsibility

- Ability to work independently, organize teamwork, and provide critical arguments for personal perspectives regarding the electrical and electronic fields.

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## 3. PROGRAM LEARNING OUTCOMES (PLOs)

| Code | Learning Outcome Topic | **Competency Level (CL)** |
|---|---|---|
| **1** | **Knowledge** | |
| PLO1 | Apply fundamental and specialized knowledge to the electrical and electronics field | 5 |
| PLO1.1 | Apply basic mathematics and physics to analyze and calculate electrical/electronic systems | 3 |
| PLO1.2 | Apply core engineering knowledge to analyze, calculate, and design electrical/electronic systems | 3 |
| PLO1.3 | Analyze, replace, operate, and maintain equipment, production lines, and automated systems | 4 |
| PLO1.4 | Calculate, evaluate, design, and improve technologies for industrial equipment and systems | 5 |
| PLO2 | Apply basic knowledge of social sciences, political science, and law | 3 |
| PLO2.1 | Apply physical education for health and defense/security knowledge for national protection | 3 |
| PLO2.2 | Apply basic political science and law knowledge to life and professional work | 3 |
| PLO2.3 | Apply basic social science knowledge to work and life | 3 |
| PLO3 | Use information technology to meet job requirements in electrical and electronics | 5 |
| PLO3.1 | Apply information technology knowledge to professional tasks | 4 |
| PLO3.2 | Apply programming languages and specialized software in the engineering field | 5 |
| PLO4 | Plan, organize, and supervise activities in the electrical and electronics field | 4 |
| PLO4.1 | Plan and organize activities in the electrical and electronics sector | 4 |
| PLO4.2 | Supervise activities within the electrical and electronics sector | 4 |
| PLO5 | Apply management and operational knowledge in the electrical and electronics field | 5 |
| PLO5.1 | Manage and operate construction, maintenance, and system improvement activities | 4 |
| PLO5.2 | Manage and operate design activities and project supervision | 5 |
| **2** | **Skills** | |
| PLO6 | Proficiently perform professional skills in the electrical and electronics field | 5 |
| PLO6.1 | Participate in scientific research activities within the field | 3 |
| PLO6.2 | Coordinate operation, inspection, and repair of production line equipment | 4 |
| PLO6.3 | Calculate, design, plan, and program for electrical and electronic systems | 5 |
| PLO7 | Combine leadership and entrepreneurial skills in the field | 5 |

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|---|---|---|
| PLO7.1 | Search for and create employment opportunities for oneself | 5 |
| PLO7.2 | Lead, start a business, and create jobs for others in the sector | 5 |
| PLO8 | System-level reasoning and flexible problem-solving | 5 |
| PLO8.1 | Critically evaluate implementation results and perspectives | 5 |
| PLO8.2 | Use alternative and improved solutions flexibly | 5 |
| PLO9 | Evaluate work performance in the electrical and electronics field | 5 |
| PLO9.1 | Evaluate the quality of individual work within a group | 5 |
| PLO9.2 | Evaluate the task performance of other individuals in the group | 5 |
| PLO10 | Communicate and transfer electrical and electronics knowledge to others | 4 |
| PLO10.1 | Communicate, share, and disseminate knowledge in the field | 3 |
| PLO10.2 | Coordinate presentation and explanation skills for professional issues | 4 |
| PLO11 | Use foreign languages for work, communication, and technical documentation | 3 |
| PLO11.1 | Basic communication in English | 3 |
| PLO11.2 | Read and understand technical documentation in English | 3 |
| **3** | **Autonomy and Responsibility** | |
| PLO12 | Work independently and in groups; take individual and group responsibility | 5 |
| PLO12.1 | Build individual work plans and perform tasks independently | 5 |
| PLO12.2 | Evaluate and synthesize group information and organize group work | 5 |
| PLO13 | Deploy, implement, and supervise activities related to the field | 5 |
| PLO13.1 | Deploy and guide tasks for others to perform | 5 |
| PLO13.2 | Monitor and evaluate the work performance of others | 5 |
| PLO14 | Conceptualize and establish design requirements for systems | 5 |
| PLO14.1 | Independently form ideas and propose design requirements | 5 |
| PLO14.2 | Defend personal perspectives on proposed ideas | 5 |
| PLO15 | Plan effective resource use and management in activities | 5 |
| PLO15.1 | Plan, coordinate, and manage resources | 5 |
| PLO15.2 | Evaluate and improve the effectiveness of activities | 5 |

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## 4. COURSE-TO-PLO CORRELATION MATRIX

| No. | Course Code | Internal Code | Course Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0101100651 | 11200001 | Marxist-Leninist Philosophy | | 3 | | | | | | | | | | 3 | | | |
| 2 | 0101002298 | 11200002 | Marxist-Leninist Political Economy | | 3 | | | | | | | | | | 3 | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 0101006322 | 11200005 | Ho Chi Minh Ideology | | 3 | | | | | | | | | 3 | | | | |
| 4 | 0101001625 | 11200004 | History of the VN Communist Party | | 3 | | | | | | | | | 3 | | | | |
| 5 | 0101000476 | 11200003 | Scientific Socialism | | 2 | | | | | | | | | 3 | | | | |
| 6 | 0101003671 | 11200006 | General Law | | 2 | | | | | | | | | 3 | | | | |
| 7 | 0101100936 | 17200001 | Innovation and Entrepreneurship | | 3 | | 3 | | | | | | | 3 | | | | |
| 8 | 0101003909 | 13200008 | Business Administration | | 3 | | | | 4 | | | | | 4 | | | | |
| 9 | 0101003931 | 13200001 | Management Theory | | 3 | | 3 | | | | | 3 | | | | 3 | | |
| 10 | 0101006387 | 13200011 | Corporate Culture | | 3 | | | | 4 | | | | | 4 | | | | |
| 11 | 0101002400 | 07200444 | Communication Skills | | 3 | | | | | | | 3 | | | | | | |
| 12 | 0101003848 | 13200007 | Project Management | | 3 | | 3 | | | | | 3 | | | | 3 | | |
| 13 | 0101007557 | 01202010 | IT Application Skills | 2 | | 3 | | | | 3 | | | | 3 | | | | |
| 14 | 0101006144 | 15200001 | Advanced Mathematics A1 | 3 | | 3 | | | | | | | | 3 | | | | |
| 15 | 0101006195 | 15200010 | Engineering Mathematics | 3 | | | | | | | | | | 3 | | 3 | | |
| 16 | 0101100816 | 15200019 | General Physics | 3 | | | | | | 3 | | | 3 | | 3 | | | |
| 17 | 0101100822 | 14200201 | English 1 | | | | | | | | | | 3 | 3 | | | | |
| 18 | 0101100823 | 14200202 | English 2 | | | | | | | | | | 4 | 4 | | | | |
| 19 | 0101100824 | 14200203 | English 3 | | | | | | | | | | 5 | 5 | | | | |
| 20 | 0101001703 | 16201001 | Physical Education 1 | | 3 | | | | | | | | | 3 | | | | |
| 21 | 0101001709 | 16201002 | Physical Education 2 | | 3 | | | | | | | | | 3 | | | | |
| 22 | 0101001714 | 16201003 | Physical Education 3 | | 3 | | | | | | | | | 3 | | | | |
| 23 | 0101001657 | 16200004 | National Defense Ed 1 | | 3 | | | | | | | | | 3 | | | | |
| 24 | 0101001661 | 16200005 | National Defense Ed 2 | | 3 | | | | | | | | | 3 | | | | |
| 25 | 0101001673 | 16200006 | National Defense Ed 3 | | 3 | | | | | | | | | 3 | | | | |
| 26 | 0101001676 | 16200007 | National Defense Ed 4 | | 3 | | | | | | | | | 3 | | | | |
| 27 | 0101003128 | 02200027 | Electric Circuits 1 | 3 | | | | | | | | | | 3 | | 3 | | |
| 28 | 0101003131 | 02200062 | Electric Circuits 2 | 3 | | | | | | | 3 | | | | 3 | | 3 | |
| 29 | 0101003121 | 02200063 | Electromagnetic Field Theory | 2 | | | | | | | 3 | | | | 3 | | | |
| 30 | 0101001260 | 02200045 | Basic Electronics | 3 | | | | | | | | | | 3 | | 3 | | |
| 31 | 0101005024 | 02201045 | Basic Electronics Practice | | | | | | 2 | | | | | 3 | | 3 | | |
| 32 | 0101006562 | 02200002 | Linear Integrated Circuits | 3 | | | | | | | 3 | | | | 3 | | | |
| 33 | 0101002530 | 02200005 | Measurement Techniques | 3 | | | | | | | | | | 3 | | 3 | | |
| 34 | 0101005161 | 02201005 | Measurement Tech Practice | | | | | | 3 | | | 3 | | | | 3 | | |
| 35 | 0101002877 | 02200047 | Pulse and Digital Tech | 3 | | | | | | | 3 | | | | 3 | | | |
| 36 | 0101005271 | 02201047 | Pulse and Digital Tech Prac | | | | | | 3 | | | 3 | | | | 3 | | |
| 37 | 0101007289 | 02200087 | Signals and Systems | 3 | | 2 | | | | | | | | 3 | | | | |

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| 38 | 0101000005 | 02200001 | Electrical & Electronic Safety | 3 | | | | | | | | | | 3 | | 4 | |
| 39 | 0101005019 | 02201101 | Basic Electrical Practice | | | | | | | 3 | | | 3 | | | 3 | |
| 40 | 0101100944 | 01201250 | Programming in Engineering | | | 3 | | | 3 | | | | | | 3 | | | |
| 41 | 0101002124 | 02200044 | Electrical Apparatus | 3 | | | | | 3 | | | | | | 3 | | | |
| 42 | 0101100839 | 02203001 | Project 1 | | | | | 3 | | | 3 | | | 3 | 3 | | | 3 |
| 43 | 0101000387 | 02201001 | CAD in Electrical Engineering | | | 3 | | | | | 3 | | | | 3 | | | 3 |
| 44 | 0101000391 | 02201040 | CAD in Electronic Engineering | | | 3 | | | 3 | | | | | | | | | 3 |
| 45 | 0101006911 | 02200079 | Elec. Dist. Equipment | 3 | | | | | 3 | | | | | | | | 3 | |
| 46 | 0101100840 | 02201114 | Integrated Control Prog. | | | 3 | | | 3 | | | | | | 3 | | | |
| 47 | 0101003239 | 02200031 | Electric Machines | 3 | | | | | | | | 5 | | | | | 5 | |
| 48 | 0101007966 | 02201031 | Electric Machines Exp. | | | | | | | 4 | | | 5 | | | | 5 | |
| 49 | 0101006231 | 02200093 | Electrical Installation | 4 | | | | | 4 | | | | | | 4 | | 4 | 4 |
| 50 | 0101100841 | 02201093 | Electrical Install. Practice | | | | | | | 3 | | | 4 | | | | 4 | |
| 51 | 0101003072 | 02200094 | Automatic Control Theory | 5 | | | | | | | | | | | 3 | | | 3 |
| 52 | 0101005040 | 02201094 | Automatic Control Practice | | | | | | | 3 | | | | | | 3 | | 5 |
| 53 | 0101100842 | 02202001 | PLC | | | | | | | 4 | | | 4 | | | | 4 | |
| 54 | 0101001274 | 02200007 | Power Electronics | 3 | | | | | | | | 3 | | | | 3 | | |
| 55 | 0101005031 | 02201007 | Power Electronics Practice | 4 | | | | | | 4 | | | | | 3 | | | 3 |
| 56 | 0101007968 | 02200100 | Power Elec. (Wind/Solar) | 4 | | | | | 4 | | | | 3 | 3 | | | | 3 |
| 57 | 0101003868 | 02200080 | Energy Management | | | | 4 | | | | 4 | | | | | | | 4 |
| 58 | 0101000385 | 02200102 | IoT | | | 3 | | | | | | | 3 | | | | 4 | |
| 59 | 0101100843 | 02202002 | Microcontrollers | | | 3 | | | 3 | | | | | | 3 | | | |
| 60 | 0101100844 | 02201116 | Advanced Microcontrollers | | | 4 | | | 4 | | | | | | 4 | | | |
| 61 | 0101007290 | 02200085 | Digital Signal Processing | | | 4 | | | 4 | | | | | | 4 | | | |
| 62 | 0101001282 | 02200064 | Advanced Electronics | 4 | | | | | 4 | | | | | | | | 4 | |
| 63 | 0101100838 | 02200108 | Technical English | | | | | | | | | | | 3 | 3 | | | 4 |
| 64 | 0101100845 | 02203002 | Project 2 | | | | | 3 | | | 3 | | | 3 | 3 | | | 3 |
| 65 | 0101006673 | 02200022 | Biomedical Electronics | 3 | | | | | | | | | 3 | | | | 3 | |
| 66 | 0101006429 | 02200067 | Elec./Elec. Materials | 3 | | | | | | | | | | | 3 | | 5 | |
| 67 | 0101001783 | 02200061 | SCADA Systems | | | | 4 | | | | 4 | | | | | | 4 | |
| 68 | 0101006907 | 02200014 | Lighting Technology | 3 | | | | | | | | | 3 | | | | | 4 |
| 69 | 0101001588 | 02201105 | Computer-Based Ctrl/Meas | | | 5 | | | | | | | 4 | | | | 4 | |
| 70 | 0101007253 | 02201103 | Ind. Line Control Prac | | | | | | | 4 | | | 4 | | | | | 5 |
| 71 | 0101006899 | 02200033 | Power Supply Networks | 3 | | | | | | | 2 | | | | | | 3 | |
| 72 | 0101100848 | 02201123 | Substation/Line Design | 4 | | | | | 4 | | | | | | | | 4 | 4 |

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| 73 | 0101006249 | 02200036 | Electrical Drives | 4 | | | | | 4 | | | | | | | | 4 | |
| 74 | 0101100884 | 02201036 | Electrical Drives Practice | 3 | | | | | 3 | | | | | | | | 3 | 3 |
| 75 | 0101001774 | 02200105 | Power Systems | 3 | | | | | | | | | | | | | 4 | 4 |
| 76 | 0101007967 | 02201124 | Power Systems Exp. | 4 | | | | 4 | 4 | | | | 4 | | | | 4 | 4 |
| 77 | 0101100847 | 02203003 | Elec. Specialization Project | | | | | 4 | | | 4 | | | 4 | 4 | | | 4 |
| 78 | 0101100850 | 02200109 | Relay Protection | 3 | | | | | 4 | | | | | | | | 4 | 4 |
| 79 | 0101006787 | 02201079 | Network Analysis on PC | | | 4 | | | | | | | 4 | | | | | 4 |
| 80 | 0101100849 | 02201117 | Compliant Electrical Design | | | 4 | | | | | | | 4 | | | | | 3 |
| 81 | 0101100852 | 02200110 | Advanced Digital Tech | 5 | | | | | | | | 5 | | | | | 5 | |
| 82 | 0101100853 | 02201110 | Adv. Digital Tech Practice | | | 5 | | | | | | | | | | | 5 | 5 |
| 83 | 0101100851 | 02200111 | Robot Engineering | 4 | | | | | | | | 4 | | | | | 4 | |
| 84 | 0101100854 | 02200112 | IC Design | 5 | | | | | 4 | | | | | | | | 5 | 5 |
| 85 | 0101100855 | 02201112 | IC Design Practice | | | | | | | 4 | | | | | 5 | | | 4 |
| 86 | 0101100856 | 02201119 | Embedded System Design | | | 4 | | | | | | | 5 | | | | 4 | |
| 87 | 0101100857 | 02203004 | Electronic Spec. Project | 4 | | | | | 4 | 4 | | | | | | | 4 | 4 |
| 88 | 0101004024 | 02200030 | Optoelectronics | 4 | | | | | 4 | | | | | | | | 4 | |
| 89 | 0101100858 | 02201120 | Applied Electronics | | | | | | | 4 | | | 4 | | | | 4 | |
| 90 | 0101100859 | 02201121 | Image Processing | 4 | | | | | 4 | | | | | | | | 4 | |
| 91 | 0101003763 | 02201106 | Advanced PLC | | | | | | | 5 | | | 5 | | | | | 5 |
| 92 | 0101100863 | 02200122 | Intelligent Ctrl Systems | | 2 | | | | 5 | | | | | | | | | 4 |
| 93 | 0101100862 | 02200211 | Smart Grid | 4 | | | | | 4 | | | | 3 | | | | 3 | |
| 94 | 0101100846 | 02204020 | Internship (Bachelor) | | | 3 | | | | 4 | | 4 | | | 4 | | 4 | |
| 95 | 0101100860 | 02204021 | Engineer Internship | | | | | 4 | | | 5 | | | | 5 | | 5 | 5 |
| 96 | 0101100861 | 02206001 | Graduation Thesis | | | 5 | | | 5 | | | 5 | | | | | 5 | 5 |
| **Sum** | | | **Courses meeting each PLO** | **39** | **20** | **16** | **8** | **4** | **34** | **4** | **18** | **21** | **13** | **14** | **63** | **10** | **21** | **11** |

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## 5. TOTAL KNOWLEDGE VOLUME AND ADMISSION REQUIREMENTS

| No. | Knowledge Block | Credits | Percentage |
|---|---|---|---|
| 1 | General Education | 36 | 23.84% |
| 2 | Fundamental / Core Knowledge | 37 | 24.50% |
| 3 | Specialized Knowledge - Phase 1: Bachelor's | 48 | 31.79% |
| 4 | Specialized Knowledge - Phase 2: Engineer's | 30 | 19.87% |
| | **Total** | **151** | **100%** |

**Admission Requirements:** Graduates of High School or equivalent.

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## 6. TRAINING PROCESS, GRADUATION CONDITIONS, AND EVALUATION

- **English Language Proficiency:** Graduates must achieve a B1 certificate according to the 6-level Vietnamese framework or a minimum TOEIC score of 450 (Decision No. 1092/QĐ-DCT).
- **Information Technology Proficiency:** Graduates must achieve a Basic IT Application Certificate (Decision No. 1093/QĐ-DCT).
- **Evaluation:** Conducted according to the Credit-based Training Regulations (Decision No. 1603/QĐ-DCT dated August 23, 2017).

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## 7. TRAINING DURATION, DEGREES, AND CAREER OPPORTUNITIES

- **Training Duration:**
  - Bachelor's Phase (Phase 1): 3.5 years.
  - Engineer's Phase (Phases 1 & 2): 4.0 years.
- **Degrees Conferred:**
  - Bachelor of Electrical and Electronics Engineering Technology.
  - Engineer of Electrical and Electronics Engineering Technology.
- **Career Opportunities:**
  - Design Engineer or Technical Commercial Consultant.
  - Technical Maintenance Specialist; Supervisor/Researcher for installation and production projects.
  - Academic staff at colleges and intermediate vocational schools.
- **Post-Graduate Education:** Graduates can pursue Master's degrees in Electrical or Electronic Engineering or second degrees in other fields.

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## 8. DETAILED TRAINING PROGRAM CONTENT

*Note: (a) Previous Study; (b) Prerequisite; (c) Co-requisite.*

| No. | Course Code | Internal Code | Course Name | Credits (T, P) | Conditions | Sem |
|---|---|---|---|---|---|---|
| **I** | **GENERAL EDUCATION** | | **36 Credits** | | | |
| 1 | 0101100651 | 11200001 | Marxist-Leninist Philosophy | 3(3,0) | | 1 |
| 2 | 0101002298 | 11200002 | Marxist-Leninist Political Economy | 2(2,0) | 11200001 (a) | 2 |
| 3 | 0101000476 | 11200003 | Scientific Socialism | 2(2,0) | 11200002 (a) | 5 |
| 4 | 0101006322 | 11200005 | Ho Chi Minh Ideology | 2(2,0) | 11200001 (a) | 7 |
| 5 | 0101001625 | 11200004 | History of the VN Communist Party | 2(2,0) | 11200001 (a) | 6 |
| 6 | 0101100822 | 14200201 | English 1 | 3(3,0) | | 2 |
| 7 | 0101100823 | 14200202 | English 2 | 3(3,0) | 14200201 (a) | 3 |
| 8 | 0101100824 | 14200203 | English 3 | 3(3,0) | 14200202 (a) | 4 |
| 9 | 0101007557 | 01202010 | IT Application Skills | 3(1,2) | | 1 |

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|---|---|---|---|---|---|---|
| 10 | 0101003671 | 11200006 | General Law | 2(2,0) | | 3 |
| 11 | 0101006144 | 15200001 | Advanced Mathematics A1 | 3(3,0) | | 1 |
| 12 | 0101006195 | 15200010 | Engineering Mathematics | 2(2,0) | 15200001 (a) | 2 |
| 13 | 0101100816 | 15200019 | General Physics | 2(2,0) | | 2 |
| 14 | 16201001 | 16201001 | Physical Education 1 | 0 | Non-acc. | 2 |
| 15 | 16201002 | 16201002 | Physical Education 2 | 0 | Non-acc. | 3 |
| 16 | 16201003 | 16201003 | Physical Education 3 | 0 | Non-acc. | 4 |
| 17 | 0101001657 | 16200004 | National Defense Education 1 | 0 | Non-acc. | 1 |
| 18 | 0101001661 | 16200005 | National Defense Education 2 | 0 | Non-acc. | 2 |
| 19 | 0101001673 | 16200006 | National Defense Education 3 | 0 | Non-acc. | 3 |
| 20 | 0101001676 | 16200007 | National Defense Education 4 | 0 | Non-acc. | 4 |
| 21 | 0101003909 | 13200008 | Business Administration (Group A) | 2(2,0) | Elective | 6 |
| 22 | 0101003931 | 13200001 | Management Theory (Group A) | 2(2,0) | Elective | 6 |
| 23 | 0101003848 | 13200007 | Project Management (Group A) | 2(2,0) | Elective | 6 |
| 24 | 0101100936 | 17200001 | Innovation & Entrepreneurship (B) | 2(2,0) | Elective | 6 |
| 25 | 0101002400 | 07200444 | Communication Skills (Group B) | 2(2,0) | Elective | 6 |
| 26 | 0101006387 | 13200011 | Corporate Culture (Group B) | 2(2,0) | Elective | 6 |
| **II** | **CORE KNOWLEDGE** | | **37 Credits** | | | |
| 1 | 0101003128 | 02200027 | Electric Circuits 1 | 3(3,0) | 15200001 (c) | 1 |
| 2 | 0101003131 | 02200062 | Electric Circuits 2 | 2(2,0) | 02200027 (a) | 2 |
| 3 | 0101003121 | 02200063 | Electromagnetic Field Theory | 2(2,0) | 15200019 (a) | 3 |
| 4 | 0101001260 | 02200045 | Basic Electronics | 3(3,0) | 02200027 (a) | 2 |
| 5 | 0101005024 | 02201045 | Basic Electronics Practice | 2(0,2) | 02200045 (a) | 3 |
| 6 | 0101006562 | 02200002 | Linear Integrated Circuits | 2(2,0) | 02200027 (a) | 5 |
| 7 | 0101002530 | 02200005 | Measurement Techniques | 3(3,0) | 02200027/45(a) | 4 |
| 8 | 0101005161 | 02201005 | Measurement Tech Practice | 1(0,1) | 02200005 (a) | 5 |
| 9 | 0101002877 | 02200047 | Pulse and Digital Tech | 3(3,0) | 02200045 (a) | 4 |
| 10 | 0101005271 | 02201047 | Pulse and Digital Tech Practice | 2(0,2) | 02200047 (a) | 5 |
| 11 | 0101007289 | 02200087 | Signals and Systems | 2(2,0) | 15200001 (a) | 5 |
| 12 | 0101000005 | 02200001 | Electrical & Electronics Safety | 2(2,0) | 02200062 (a) | 3 |

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|---|---|---|---|---|---|---|
| 13 | 0101005019 | 02201101 | Basic Electrical Practice | 1(0,1) | 02200045 (a) | 2 |
| 14 | 0101100944 | 01201250 | Programming in Engineering | 2(0,2) | | 2 |
| 15 | 0101100838 | 02200108 | Technical English (Elec/Elec) | 2(2,0) | 14200203 (a) | 6 |
| 16 | 0101100839 | 02203001 | Project 1 | 1(0,1) | | 4 |
| 17 | 0101000387 | 02201001 | CAD in Electrical Engineering | 2(0,2) | Elective | 3 |
| 18 | 0101006911 | 02200079 | Elec. Dist. Equipment | 2(2,0) | Elective | 3 |
| 19 | 0101002124 | 02200044 | Electrical Apparatus | 2(2,0) | 02201101 (a) | 3 |
| 20 | 0101006429 | 02200067 | Electrical/Electronic Materials | 2(2,0) | Elective | 3 |
| 21 | 0101000391 | 02201040 | CAD in Electronic Engineering | 2(0,2) | 02200045 (a) | 3 |
| 22 | 0101100840 | 02201114 | Integrated Control Programming | 2(0,2) | Elective | 3 |
| **III** | **SPECIALIZED (PHASE 1)** | | **48 Credits** | | | |
| 1 | 0101003239 | 02200031 | Electric Machines | 3(3,0) | 02200062 (a) | 4 |
| 2 | 0101007966 | 02201031 | Electric Machines Experiment | 2(0,2) | 02200031 (a) | 5 |
| 3 | 0101006231 | 02200093 | Electrical Installation | 3(3,0) | 02200062 (a) | 5 |
| 4 | 0101100841 | 02201093 | Electrical Install. Practice | 2(0,2) | 02200093 (a) | 6 |
| 5 | 0101100842 | 02202001 | PLC | 3(1,2) | 02201101 (a) | 6 |
| 6 | 0101003072 | 02200094 | Automatic Control Theory | 3(3,0) | 02202001 (a) | 4 |
| 7 | 0101005040 | 02201094 | Automatic Control Practice | 2(0,2) | 02200094 (a) | 5 |
| 8 | 0101001274 | 02200007 | Power Electronics | 3(3,0) | 02200045 (c) | 3 |
| 9 | 0101005031 | 02201007 | Power Electronics Practice | 1(0,1) | 02200103 (a) | 3 |
| 10 | 0101100843 | 02202002 | Microcontrollers | 3(1,2) | 02200047 (a) | 4 |
| 11 | 0101100844 | 02201116 | Advanced Microcontrollers | 2(0,2) | 02202002 (a) | 5 |
| 12 | 0101100845 | 02203002 | Project 2 | 1(0,1) | 02203001 (a) | 6 |
| 13 | 0101006899 | 02200033 | Power Supply Networks | 3(3,0) | 02200062 (a) | 6 |
| 14 | 0101006907 | 02200014 | Lighting Technology | 2(2,0) | 02200033 (a) | 7 |
| 15 | 0101006249 | 02200036 | Electrical Drives | 2(2,0) | 02200093 (a) | 7 |
| 16 | 0101100884 | 02201036 | Electrical Drives Practice | 1(0,1) | 02200036 (c) | 7 |
| 17 | 0101001774 | 02200105 | Power Systems | 3(3,0) | 02200033 (a) | 7 |
| 18 | 0101007967 | 02201124 | Power Systems Experiment | 1(0,1) | 02200105 (c) | 7 |
| 19 | 0101100847 | 02203003 | Elec. Specialization Project | 2(0,2) | 02203002 (a) | 7 |
| 20 | 0101100846 | 02204020 | Internship (Bachelor) | 2(0,2) | | 7 |
| 21 | 0101003763 | 02201106 | Advanced PLC | 2(0,2) | Elective | 7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22 | 0101004625 | 02200081 | Substation/Line Design | 2(2,0) | Elective | 7 |
| 23 | 0101006787 | 02201079 | Network Analysis on PC | 2(0,2) | Elective | 7 |
| 24 | 0101100849 | 02201117 | Compliant Electrical Design | 2(0,2) | Elective | 7 |
| 25 | 0101007253 | 02201103 | Ind. Line Control Practice | 2(0,2) | Elective | 7 |
| 26 | 0101100850 | 02200109 | Relay Protection | 2(2,0) | Elective | 7 |
| 27 | 0101100851 | 02200111 | Robot Engineering | 3(3,0) | Required (ET) | 6 |
| 28 | 0101100852 | 02200110 | Advanced Digital Tech | 2(2,0) | Required (ET) | 7 |
| 29 | 0101100853 | 02201110 | Adv. Digital Tech Practice | 1(0,1) | 110 (c) | 7 |
| 30 | 0101100854 | 02200112 | IC Design | 2(2,0) | Required (ET) | 7 |
| 31 | 0101100855 | 02201112 | IC Design Practice | 2(0,2) | 112 (c) | 7 |
| 32 | 0101100856 | 02201119 | Embedded System Design | 2(0,2) | Required (ET) | 7 |
| 33 | 0101100857 | 02203004 | Electronic Spec. Project | 2(0,2) | Required (ET) | 7 |
| 34 | 0101006673 | 02200022 | Biomedical Electronics | 2(2,0) | Elective | 7 |
| 35 | 0101100858 | 02201120 | Applied Electronics | 2(0,2) | Elective | 7 |
| 36 | 0101100859 | 02201121 | Image Processing | 2(0,2) | Elective | 7 |
| 37 | 0101001588 | 02201105 | Computer-Based Ctrl/Meas | 2(0,2) | Elective | 7 |
| 38 | 0101007290 | 02200085 | Digital Signal Processing | 2(2,0) | Elective | 7 |
| **IV** | **ADVANCED (PHASE 2)** | | **30 Credits** | | | |
| 1 | 0101100860 | 02204021 | Engineer Internship | 8 | Required | DN |
| 2 | 0101100861 | 02206001 | Graduation Thesis | 14 | Required | DN |
| 3 | 0101007968 | 02200100 | Power Elec. (Wind/Solar) | 2(2,0) | Elective | DN |
| 4 | 0101003868 | 02200080 | Energy Management | 2(2,0) | Elective | DN |
| 5 | 0101001783 | 02200061 | SCADA Systems | 2(2,0) | Elective | DN |
| 6 | 0101100862 | 02200211 | Smart Grid | 2(2,0) | Elective | DN |
| 7 | 0101100863 | 02200122 | Intelligent Ctrl Systems | 2(2,0) | Elective | DN |
| 8 | 0101001282 | 02200064 | Advanced Electronics | 2(2,0) | Elective | DN |
| 9 | 0101000385 | 02200102 | IoT | 2(2,0) | Elective | DN |
| 10 | 0101004024 | 02200030 | Optoelectronics | 2(2,0) | Elective | DN |

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**9. SEMESTER-BY-SEMESTER TRAINING PLAN**

## Semester 1

| Course Code | Course Name | Credits | Notes |
|---|---|---|---|
| 0101100651 | Marxist-Leninist Philosophy | 3 | |
| 0101007557 | IT Application Skills | 3 | |
| 0101006144 | Advanced Mathematics A1 | 3 | |
| 0101001657 | National Defense Education 1 | 3 | Non-accumulative |

| | | | |
|---|---|---|---|
| 0101003128 | Electric Circuits 1 | 3 | |
| 0101100816 | General Physics | 2 | |

## Semester 2

| Course Code | Course Name | Credits | Notes |
|---|---|---|---|
| 0101002298 | Marxist-Leninist Political Economy | 2 | |
| 0101100822 | English 1 | 3 | |
| 0101006195 | Engineering Mathematics | 2 | |
| 16201001 | Physical Education 1 | 2 | Non-accumulative |
| 0101001661 | National Defense Education 2 | 2 | Non-accumulative |
| 0101003131 | Electric Circuits 2 | 2 | |
| 0101001260 | Basic Electronics | 3 | |
| 0101005019 | Basic Electrical Practice | 1 | |
| 0101100944 | Programming in Engineering | 2 | |
| 0101003121 | Electromagnetic Field Theory | 2 | |

## Semester 3

| Course Code | Course Name | Credits | Notes |
|---|---|---|---|
| 0101100823 | English 2 | 3 | |
| 0101003671 | General Law | 2 | |
| 16201002 | Physical Education 2 | 2 | Non-accumulative |
| 0101001673 | National Defense Education 3 | 1 | Non-accumulative |
| 0101001274 | Power Electronics | 3 | |
| 0101005024 | Basic Electronics Practice | 2 | |
| 0101000005 | Electrical & Electronics Safety | 2 | |
| 0101005031 | Power Electronics Practice | 1 | |
| Multiple | Elective (CAD/Materials/Apparatus) | 4 | Choose 2 |

## Semester 4

| Course Code | Course Name | Credits | Notes |
|---|---|---|---|
| 0101100824 | English 3 | 3 | |
| 16201003 | Physical Education 3 | 1 | Non-accumulative |
| 0101001676 | National Defense Education 4 | 2 | Non-accumulative |
| 0101002530 | Measurement Techniques | 3 | |
| 0101002877 | Pulse and Digital Tech | 3 | |
| 0101003239 | Electric Machines | 3 | |
| 0101100839 | Project 1 | 1 | |
| 0101003072 | Automatic Control Theory | 3 | |
| 0101100843 | Microcontrollers | 3 | |

## Semester 5

| Course Code | Course Name | Credits | Notes |
|---|---|---|---|
| 0101000476 | Scientific Socialism | 2 | |
| 0101005161 | Measurement Tech Practice | 1 | |
| 0101005271 | Pulse and Digital Tech Prac | 2 | |
| 0101007289 | Signals and Systems | 2 | |
| 0101006231 | Electrical Installation | 3 | |
| 0101007966 | Electric Machines Experiment | 2 | |
| 0101005040 | Automatic Control Practice | 2 | |
| 0101006562 | Linear Integrated Circuits | 2 | |
| 0101100844 | Advanced Microcontrollers | 2 | |

## Semester 6

| Course Code | Course Name | Credits | Notes |
|---|---|---|---|
| 0101001625 | History of the VN Communist Party | 2 | |
| 0101100842 | PLC | 3 | |
| 0101100841 | Practical Electrical Equipment | 2 | |
| 0101100838 | Technical English | 2 | |
| 0101100845 | Project 2 | 1 | |
| 0101006899 | Power Supply Networks (Elec.) | 3 | Specialization |
| 0101100851 | Robot Engineering (Electronics) | 3 | Specialization |
| Multiple | Group A Elective (Management) | 2 | Choose 1 |
| Multiple | Group B Elective (Innovation/Skills) | 2 | Choose 1 |

## Semester 7

| Course Code | Course Name | Credits | Notes |
|---|---|---|---|
| 0101006322 | Ho Chi Minh Ideology | 2 | |
| 0101100846 | Graduation Internship (Bachelor) | 2 | |
| Multiple | Specialized Courses (Electrical) | 11 | Required Core |
| Multiple | Specialized Courses (Electronics) | 11 | Required Core |
| Multiple | Major Electives | 4 | Choose 2 |

## Enterprise Semester (Engineer Phase)

| Course Code | Course Name | Credits | Notes |
|---|---|---|---|
| 0101100860 | Engineer Internship | 8 | |
| 0101100861 | Graduation Thesis | 14 | |
| Multiple | Advanced Electives | 8 | Choose 4 |

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### 10. IMPLEMENTATION GUIDELINES

### 10.1. Training Units

- Organize execution strictly according to the curriculum requirements and sequence.
- Assign qualified lecturers and provide standardized, detailed syllabi for each course.
- Prepare academic advisors to understand the credit system and guide student registration.
- Ensure necessary facilities, laboratories, textbooks, and technical references are accessible.

**10.2. Lecturers**

- Conduct thorough research of course outlines to prepare lectures and teaching aids.
- Ensure all course materials and study guides are provided to students at least one week in advance.
- Facilitate active learning through group discussions, tutorials, and practical workshop sessions.

**10.3. Testing and Evaluation**

- Maintain continuous monitoring of student progress both in class and through home assignments.
- Apply evaluation methods strictly following the institutional Credit-based Training Regulations.
- Implement rigorous measures to prevent and combat all forms of academic dishonesty.

**10.4. Students**

- Consult with academic advisors to plan a registration progress suitable for personal capability.
- Research instructional materials prior to class and maintain full attendance for guidance.
- Commit to self-study, active group participation, and the use of diverse library and online resources.
- Maximize utilization of library and online resources for self-improvement and the graduation thesis.