

Electrical Power Technology

2003 Curriculum for Diploma of Vocational Education
Area of Study : Industrial Trades
Program : Electrical Power Technology
Objectives

The program aims at providing students with knowledge, skills, abilities, attitudes and experience which will enable them to perform as skilled technicians in the field of Electrical Power Technology. The objectives of the program are:

1. To provide basic knowledge and skills about languages, society, humanities, mathematics and science; and also to apply these to self-development by seeking out further knowledge within the field of Electrical Power Technology.
2. To provide knowledge and skills about the basic principles and processes of technician tasks concerning industrial management and planning; and to provide the ability to follow new technological developments to improve their career.
3. To promote critical thinking, problem-solving skills and creative thinking; and to provide the ability to bring the technology into the development of Electrical Power work.
4. To promote good personality, responsibility to themselves, family and society, morals and ethics; and good manners in their career.
5. To provide the ability to work in industrial workplaces or in self-employment in the field of Electrical Power Technology.

Vocational Education Standards of the Program

Students should be able to:

1. Conduct technical communication in the workplace
2. Organize and program data-based systems in the workplace
3. Solve problems using mathematics, science, technology and relevant procedures
4. Manage, control and develop their quality of work
5. Demonstrate the attributes of technicians
6. Design electrical drawing systems using CAD
7. Analyze electrical circuits using electrical theories
8. Test electrical machines
9. Control electrical equipment using controller
10. Design and install electrical systems
11. Fix and produce electrical and electronic equipment
12. Control driving equipment using Pneumatics and hydraulics

Electrical Machines Specialization

13. Test and analyze characteristic of electrical machines
14. Install electrical machines following the blueprint
15. Control electrical machines using electronic controller
16. Fix and maintain electrical machines

Electrical Installation Specialization

13. Design electrical system using computer
14. Install electrical equipment following the blueprint
15. Inspect, maintain and repair electrical systems

Refrigeration and Air-condition Specialization

13. Design of refrigeration and air-condition systems
14. Install refrigeration and air-condition equipment following the blueprint
15. Repair and maintain refrigeration and air-condition equipment

Industrial Instruments Specialization

13. Inspect and adjust instruments and controllers following the manual
14. Install and repair instruments, controllers and accessories following the manual

Building System Specialization

13. Control, fix and maintain electrical building systems
14. Control, fix and maintain electrical equipment
15. Inspect and control the safety system of building

Distribution System Maintenance Specialization

13. Repair and maintain electrical equipment in distribution system
14. Inspect and maintain pumps and motors
15. Inspect and maintain refrigeration and air-conditioning systems

Program Structure
2003 Curriculum for the Diploma of Vocational Education
Area of Study : Industrial Trades
Program : Electrical Power Technology

For the fulfillment of the program, graduates should have completed at least 95 credits from the 5 groups of courses below.

1. General Courses (not less than)		24 credits
1.1 Basic General Courses	13 credits	
1.2 Vocational-based General Courses (not less than)	11 credits	
2. Vocational Courses (not less than)		65 credits
2.1 Basic Vocational Courses	13 credits	
2.2 Core Vocational Courses	30 credits	
2.3 Specialized Vocational Courses (not less than)	18 credits	
2.4 Project	4 credits	
3. Free Elective Courses (not less than)		6 credits
4. On-the-job Training (not less than 1 Semester)		
5. Extracurricular Activities 120 Hours		
Total (not less than)		95 credits

Entry into this program requires satisfactory completion of the Vocational Education Certificate in Electrical Power Program or equivalent.

Bridging Courses

Students who have completed a Vocational Education Certificate in other fields or completed secondary school (M6 or Grade 12) must complete bridging courses as follows:

Code	Course Title	Cr	(Hr)
3100-0001	Basic Bench Work	3	(5)
3100-0002	Technical Drawing	2	(4)
3100-0003	Electrical and Electronics Work	2	(4)
3104-0001	Electrical Drawing	2	(4)
3104-0002	Electrical Instruments and Circuits	3	(5)
3104-0003	Basic Electrical Machines	2	(4)
3104-0004	Interior and Exterior of Electrical Installation	3	(5)
3104-0005	Electrical Motors and Controls	3	(5)
	Total	20	(36)

1. General Courses (not less than) 24 credits

1.1 Basic General Courses		13 credits	
Code	Course Title	Cr	(Hr)
3000-110X	Thai Language (Elective)	3	(3)
3000-1201	Developing Skills for English Communication 1	2	(3)
3000-1202	Developing Skills for English Communication 2	2	(3)
3000-1301	Thai Life and Culture	1	(1)
3000-130X	Social Studies (Elective)	2	(2)
3000-1601	Library and Information Studies	1	(1)
3000-160X	Humanities (Elective)	2	(2)

1.2 Vocational-based General Courses		(not less than) 11 credits	
Code	Course Title	Cr	(Hr)
3000-122X	English (Elective)	1	(2)
3000-122X	English (Elective)	1	(2)
3000-142X	Science (Elective)	3	(4)
3000-1521	Mathematics 2	3	(3)
3000-1525	Calculus 1	3	(3)

2. Vocational Courses (not less than) 65 credits

2.1 Basic Vocational Courses 13 credits

Students must take the compulsory courses (3104-1001 to -1003) and select one course from 3000-100X and one from 3000-020X to fulfill the requirements.

Code	Course Title	Cr	(Hr)
3104-1001	Electric Circuits	3	(4)
3104-1002	Electrical Instruments	2	(3)
3104-1003	Applied Digital Circuits	2	(3)
3000-100X	Quality Management (Elective)	3	(3)
3000-020X	Computer Technology (Elective)	3	(4)

Remarks : The code with X will be chosen from the appendix.

2.2 Core Vocational Courses 30 credits

Students must take 8 compulsory courses(3104-2001 to 1008) and select courses from the remainder to fulfill the requirements.

Code	Course Title	Cr	(Hr)
3104-2001	Electrical Installation 1	3	(4)
3104-2002	Electrical Machines 1	3	(4)
3104-2003	Electrical Machines 2	3	(4)
3104-2004	Electrical Design	3	(3)
3104-2005	Electrical Drafting CAD	3	(4)
3104-2006	Industrial Electronics	3	(4)
3104-2007	Industrial Control Systems	3	(4)
3104-2008	Electrical Transmission and Distribution	3	(3)
3104-2009	Electrical Mathematics	3	(3)
3104-2010	Electrical Circuit Analysis	3	(3)
3104-2011	Microcontrollers	3	(4)
3100-0106	Pneumatics and Hydraulics	3	(4)

2.3 Specialized Vocational Courses (not less than) 18 credits

Students must take at least 18 credits from the Specialized Vocational Courses. These can be taken from one field of specialization or across different fields of specialization.

1. Electrical Machines Specialization

Code	Course Title	Cr	(Hr)
3104-2101	Power Electronics	3	(4)
3104-2102	Electrical Power Drives	3	(4)
3104-2103	Power Plants	2	(2)
3104-2104	Electrical Machines 3	3	(4)
3104-2105	Electrical Machine Maintenance	3	(4)
3104-2106	Electromagnetics	2	(2)
3104-2107	Special Problems in Electrical Machines	3	(*)
3104-2108	Advanced Electrical Machines 1	3	(*)
3104-2109	Advanced Electrical Machines 2	3	(*)
3104-2208	Technology of Building Systems	3	(4)
3104-2403	Microprocessor application	3	(4)
3104-4101	Electrical Machines Apprenticeship 1	5	(*)
3104-4102	Electrical Machines Apprenticeship 2	5	(*)
3104-4103	Electrical Machines Apprenticeship 3	4	(*)
3104-4104	Electrical Machines Apprenticeship 4	4	(*)

2. Electrical Installation Specialization

Code	Course Title	Cr	(Hr)
3104-2103	Power Plant	2	(2)
3104-2201	Electrical Installation 2	3	(4)
3104-2202	Illumination	2	(2)
3104-2203	Estimation Electrical System	2	(2)
3104-2204	Building Transportation Technology	3	(4)
3104-2205	Electrical System Protection	2	(2)
3104-2206	Communication and Alarm system	3	(4)
3104-2207	Electrical System Maintenance	3	(4)
3104-2208	Building System Technology	3	(4)
3104-2209	Special Problem in Electrical Installation	3	(*)
3104-2210	Advanced Electrical Installation	3	(*)
3104-4201	Electrical Installation Apprenticeship 1	5	(*)
3104-4202	Electrical Installation Apprenticeship 2	5	(*)
3104-4203	Electrical Installation Apprenticeship 3	4	(*)
3104-4204	Electrical Installation Apprenticeship 4	4	(*)

3. Refrigeration and Air-Condition Specialization

Code	Course Title	Cr	(Hr)
3100-0111	Thermodynamic	3	(3)
3104-2301	Industrial Air-Condition	3	(4)
3104-2302	Industrial Refrigeration	3	(4)
3104-2303	Refrigeration Equipments Control	3	(4)
3104-2304	Air Distribution and Water Supply system	2	(2)
3104-2305	Transport Refrigeration and Air- Condition	3	(3)
3104-2306	Refrigeration and Air- Condition Maintenance	3	(4)
3104-2307	Special Problem in Refrigeration and Air- Condition	3	(*)
3104-2308	Advance Refrigeration and Air- Condition	3	(*)
3104-4301	Refrigeration and Air- Condition Apprenticeship 1	5	(*)
3104-4302	Refrigeration and Air- Condition Apprenticeship 2	5	(*)
3104-4303	Refrigeration and Air- Condition Apprenticeship 3	4	(*)
3104-4304	Refrigeration and Air- Condition Apprenticeship 4	4	(*)

4. Industrial Instruments Specialization

Code	Course Title	Cr	(Hr)
3104-2401	Instrumentation	3	(4)
3104-2402	Process Controller	3	(4)
3104-2403	Microprocessor Applications	3	(4)
3104-2404	Instrumentation and Controller Technology	3	(4)
3104-2405	Advance Instrumentation and Process Control	3	(4)
3104-2406	Industrial Tools and Equipments	2	(2)
3120-2004	Fluid Mechanics & Thermodynamics	3	(3)
3120-2006	Sensors and Transducers	3	(4)
3120-2103	Equipment Industrial Instruments and Controller	2	(3)
3120-2104	Instrument and Control Procedures	2	(2)
3104-4401	Industrial Instruments Apprenticeship 1	5	(*)
3104-4402	Industrial Instruments Apprenticeship 2	5	(*)
3104-4403	Industrial Instruments Apprenticeship 3	4	(*)
3104-4404	Industrial Instruments Apprenticeship 4	4	(*)

5. Distribution System Maintenance Specialization

Code	Course Title	Cr	(Hr)
3104-2207	Maintenance Electrical System	3	(4)
3104-2501	Refrigeration	3	(4)
3104-2502	Refrigeration and Air-Condition Maintenance	3	(4)
3104-2503	Industrial Motor Maintenance	3	(4)
3104-2504	Industrial Pump Maintenance	3	(4)
3104-2505	Instruments and Protection Equipments In Distribution System	3	(5)
3104-2506	Maintenance Electrical Equipment and Distribution System	3	(4)
3104-2507	Special Problem in Maintenance Distribution System	3	(4)
3104-4501	Distribution System Maintenance Apprenticeship 1	5	(*)
3104-4502	Distribution System Maintenance Apprenticeship 2	5	(*)
3104-4503	Distribution System Maintenance Apprenticeship 3	4	(*)
3104-4504	Distribution System Maintenance Apprenticeship 4	4	(*)

6. Building System Specialization

Code	Course Title	Cr	(Hr)
3104-2103	Power Plant	2	(2)
3104-2104	Electrical Machines 3	3	(4)
3104-2201	Electrical Installation 2	3	(4)
3104-2202	Illumination	2	(2)
3104-2204	Transportation Technology	3	(4)
3104-2206	Communication and Alarm system	3	(4)
3104-2208	Building System Technology	3	(4)
3104-2301	Industrial Air-Condition	3	(4)
3104-2306	Refrigeration and Air- Condition Maintenance	3	(4)
3104-2403	Microprocessor Applications	3	(4)
3104-2601	Design Construction and Building Sanitary	3	(3)
3104-2602	Electrical Building System	3	(4)
3104-2603	Maintenance Building Utilities and Facilities System	3	(4)
3104-2604	Energy Conservation	3	(4)
3104-2605	Safety in Building System	3	(4)
3104-4601	Building System Specialization Apprenticeship	5	(*)
3104-4602	Building System Specialization Apprenticeship	5	(*)
3104-4603	Building System Specialization Apprenticeship	4	(*)
3104-4604	Building System Specialization Apprenticeship	4	(*)

For the Dual System (apprenticeships), the college and the employer together analyze the course objectives and course standards, to produce an appropriate work plan (40 hours is equivalent to 1 credit) and design a method of evaluation.

2.4 Project

4 credits

Code	Course Title	Cr	(Hr)
3104-6001	Project	4	(*)

3. Free Elective Courses

(not less than) 6 credits

Students can choose courses from any area of study, according to their aptitude and interests, from the list provided in the 2003 Curriculum for the Diploma of Vocational Education.

4. On-the-job Training (not less than 1 Semester)

For On-the-job Training, the college selects Vocational Courses which are undertaken at the workplace, for at least 1 semester.

5. Extracurricular Activities (120 Hours)

The college arranges extracurricular activities for 40 hours/semester, totaling not less than 120 hours for the entire program.