



2013 Curriculum for the Certificate of Vocational Education in Industrial Trades

Electronics Program

**Office of
the Vocational Education Commission
Ministry of Education**

Structure

2013 Curriculum for the Certificate of Vocational Education in Industrial Trades

Electronics Program

The graduates of the Certificate of Vocational Education in Industrial Trades (Electronics) must complete minimum 103 credits from different courses and participate in extracurricular activities as shown in the following structure.

| | | |
|---|--------------------|----------------------------|
| 1. Life Skills Courses | | minimum 22 credits |
| 1.1 Thai Language Courses | | (minimum 3 credits) |
| 1.2 Foreign Language Courses | | (minimum 6 credits) |
| 1.3 Science Courses | | (minimum 4 credits) |
| 1.4 Mathematics Courses | | (minimum 4 credits) |
| 1.5 Social Studies Courses | | (minimum 3 credits) |
| 1.6 Health Education and Physical Education Courses | | (minimum 2 credits) |
| 2. Vocational Skills Courses | | minimum 71 credits |
| 2.1 Basic Vocational Skills Courses | | (18 credits) |
| 2.2 Specialized Vocational Skills Courses | | (24 credits) |
| 2.3 Elective Vocational Skills Courses | | (minimum 21 credits) |
| 2.4 Vocational Skills Practical Experience | | (4 credits) |
| 2.5 Vocational Skills Development Project | | (4 credits) |
| 3. Elective Courses | | minimum 10 credits |
| 4. Extracurricular Activities | (2 hours per week) | |
| | Total | minimum 103 credits |

1. Life Skill Courses**minimum 22 credits**

In each group listed below, the first course is compulsory (except 1.6). The remaining credits can be selected from other courses within the group to meet the requirements. The chosen courses must be related to the program of study. The total credits should be at least 22.

1.1 Thai Language Courses (minimum 3 credits)

| Code | Title | T – P – C |
|------------------------|--|------------------|
| 2000-1101 | Basic Thai | 2 – 0 – 2 |
| 2000-1102 | Thai for Careers | 1 – 0 – 1 |
| 2000-1103 | Business Thai | 1 – 0 – 1 |
| 2000-1104 | Speaking for Careers | 1 – 0 – 1 |
| 2000-1105 | Writing for Careers | 1 – 0 – 1 |
| 2000-1106 | Creative Thai | 1 – 0 – 1 |
| 2000*1101 to 2000*1199 | Courses in this range are additionally developed by the individual colleges or institutes. | * - * - * |

1.2 Foreign Language Courses (minimum 6 credits)

| Code | Title | T – P – C |
|------------------------|--|------------------|
| 2000-1201 | Real Life English 1 | 2 – 0 – 2 |
| 2000-1202 | Real Life English 2 | 2 – 0 – 2 |
| 2000-1203 | English Listening and Speaking 1 | 0 – 2 – 1 |
| 2000-1204 | English Listening and Speaking 2 | 0 – 2 – 1 |
| 2000-1205 | Reading Authentic Materials | 0 – 2 – 1 |
| 2000-1206 | Daily Writing | 0 – 2 – 1 |
| 2000-1207 | Technical English On-the-Job | 0 – 2 – 1 |
| 2000*1201 to 2000*1299 | Courses in this range are additionally developed by the individual colleges or institutes. | * - * - * |

1.3 Science Courses (minimum 4 credits)

| Code | Title | T – P – C |
|------------------------|--|------------------|
| 2000-1301 | Science for Life Skills | 1 – 2 – 2 |
| 2000-1302 | Science for Industry | 1 – 2 – 2 |
| 2000-1306 | Science Project | 0 – 2 – 1 |
| 2000*1301 to 2000*1399 | Courses in this range as additionally developed by the individual colleges or institutes | * - * - * |

1.4 Mathematics Courses (minimum 4 credits)

| Code | Title | T – P – C |
|------------------------|--|------------------|
| 2000-1401 | Basic Mathematics | 2 – 0 – 2 |
| 2000-1402 | Basic Mathematics for Careers | 2 – 0 – 2 |
| 2000-1403 | Basic Mathematics for Industry 1 | 2 – 0 – 2 |
| 2000-1404 | Basic Mathematics for Industry 2 | 2 – 0 – 2 |
| 2000-1405 | Introduction to Calculus and Analytic Geometry | 2 – 0 – 2 |
| 2000*1401 to 2000*1499 | Courses in this range are additionally developed by the individual colleges or institutes. | * - * - * |

1.5 Social Studies Courses (minimum 3 credits)

| Code | Title | T – P – C |
|------------------------|--|------------------|
| 2000-1501 | Civil Duties and Morals | 2 – 0 – 2 |
| 2000-1502 | Life Skills and Society | 2 – 0 – 2 |
| 2000-1503 | Geography and Thai History | 2 – 0 – 2 |
| 2000-1504 | ASEAN Studies | 1 – 0 – 1 |
| 2000-1505 | Current Affairs | 1 – 0 – 1 |
| 2000-1506 | ASEAN Culture | 1 – 0 – 1 |
| 2000*1501 to 2000*1599 | Courses in this range are additionally developed by the individual colleges or institutes. | * - * - * |

1.6 Health Education and Physical Education Courses (minimum 2 credits)

Select any course(s) within this group for a total of not less than 2 credits.

1.6.1 Physical Education courses

| Code | Title | T – P – C |
|-------------|---|------------------|
| 2000-1601 | Physical Education for Health Development | 0 – 2 – 1 |
| 2000-1602 | Life Skills for Health Development | 0 – 2 – 1 |
| 2000-1603 | Physical Fitness for Work | 0 – 2 – 1 |
| 2000-1604 | Self-Defense | 0 – 2 – 1 |
| 2000-1605 | Physical Education for Disabled | 0 – 2 – 1 |

1.6.2 Health Education courses

| Code | Title | T – P – C |
|-------------|-------------------------------|------------------|
| 2000-1606 | Life Management for Happiness | 1 – 0 – 1 |
| 2000-1607 | Sexuality Education | 1 – 0 – 1 |
| 2000-1608 | Narcotic Education | 1 – 0 – 1 |

1.6.3 Integrated courses

| Code | Title | T – P – C |
|-------------|-----------------------------|------------------|
| 2000-1609 | Skills for Healthy Behavior | 1 – 2 – 2 |
| 2000-1610 | Quality of Life Development | 1 – 2 – 2 |

| Code | Title | T – P – C |
|------------------------|--|------------------|
| 2000*1601 to 2000*1699 | Courses in this range are additionally developed by the individual colleges or institutes. | * - * - * |

2. Vocational Skills Courses minimum 71 credits

2.1 Basic Vocational Skills Courses (18 credits) All courses are compulsory.

| Code | Title | T – P – C |
|-------------|------------------------------------|------------------|
| 2001-1001 | Work Orientation | 2 – 0 – 2 |
| 2001-2001 | Computer and Information for Work | 1 – 2 – 2 |
| 2100-1001 | Basic Technical Drawing | 1 – 3 – 2 |
| 2100-1002 | Industrial Materials | 2 – 0 – 2 |
| 2100-1003 | Bench Works 1 | 0 – 6 – 2 |
| 2100-1005 | Basic Welding and Sheet Metal Work | 1 – 3 – 2 |
| 2100-1007 | Basic Machine Assembly | 1 – 3 – 2 |
| 2100-1008 | Basic Machine Tools | 1 – 3 – 2 |
| 2100-1009 | Basic Pneumatic and Hydraulic Work | 1 – 3 – 2 |

- **Additional Basic Vocational Skills Courses**

Colleges and institutes can also provide the following courses under the Elective Vocational Skills Courses or Elective Courses.

| Code | Title | T – P – C |
|-------------|---|------------------|
| 2001-1002 | Entrepreneurship | 2 – 0 – 2 |
| 2001-1003 | Energy and the Environment | 1 – 2 – 2 |
| 2001-1004 | Vocational Hygiene and Safety | 1 – 2 – 2 |
| 2001-1005 | Resource and Environment Conservation at Work | 1 – 0 – 1 |
| 2001-1006 | Labor Law | 1 – 0 – 1 |
| 2001-1007 | Work Safety | 1 – 0 – 1 |

2.2 Specialized Vocational Skills Courses (24 credits) All courses are compulsory.

| Code | Title | T – P – C |
|-------------|---------------------------------------|------------------|
| 2105-2001 | Electrical and Electronic Drawing | 0 – 3 – 1 |
| 2105-2002 | DC Circuits | 1 – 3 – 2 |
| 2105-2003 | AC Circuits | 1 – 3 – 2 |
| 2105-2004 | Electrical and Electronic Instruments | 1 – 3 – 2 |
| 2105-2005 | Electronics Devices and Circuits | 2 – 3 – 3 |
| 2105-2006 | Pulse and Switching Circuits | 1 – 3 – 2 |
| 2105-2007 | Digital Circuits | 1 – 3 – 2 |
| 2105-2008 | Audio Equipment | 1 – 3 – 2 |
| 2105-2009 | Radio Receivers | 2 – 3 – 3 |
| 2105-2010 | Radio Transmitters | 1 – 3 – 2 |
| 2105-2011 | Television Receivers | 2 – 3 – 3 |

2.3 Elective Vocational Skills Course (minimum 21 credits)

Select courses from the following list.

Electronics

| Code | Title | T – P – C |
|------------------------|---|-----------|
| 2105-2101 | Electronic Mathematics | 2 – 0 – 2 |
| 2105-2102 | Sound Systems | 1 – 3 – 2 |
| 2105-2103 | Video Systems | 1 – 3 – 2 |
| 2105-2104 | IC and Applications | 1 – 3 – 2 |
| 2105-2105 | Microcontrollers | 1 – 3 – 2 |
| 2105-2106 | Transmission Lines and Antennas | 1 – 3 – 2 |
| 2105-2107 | Electronic CAD | 1 – 3 – 2 |
| 2105-2108 | Silkscreen and Printed Circuits Boards | 1 – 3 – 2 |
| 2105-2109 | Computer Services | 1 – 3 – 2 |
| 2105-2110 | Computers Networks | 1 – 3 – 2 |
| 2105-2111 | Industrial Electronics | 2 – 3 – 3 |
| 2105-2112 | Power Electronics | 1 – 3 – 2 |
| 2105-2113 | Programmable Logic Control | 1 – 3 – 2 |
| 2105-2114 | Telephones | 1 – 3 – 2 |
| 2105-2115 | Transceivers | 1 – 3 – 2 |
| 2105-2116 | Basic Telecommunications | 2 – 0 – 2 |
| 2105-2117 | Electronic Services | 1 – 3 – 2 |
| 2105-2118 | Computer Programming | 1 – 3 – 2 |
| 2105-2119 | Digital Television Receivers | 1 – 3 – 2 |
| 2105-2120 | Pneumatic and Hydraulic Control | 1 – 3 – 2 |
| 2105-2121 | Basic Robotics | 1 – 3 – 2 |
| 2105-2122 | Basic Interfaces | 1 – 3 – 2 |
| 2105-2123 | Mobile Phone Systems | 1 – 3 – 2 |
| 2105-2124 | Electronic Devices in Security Systems | 1 – 3 – 2 |
| 2105-2125 | Industrial Instrumentation | 1 – 3 – 2 |
| 2105-2126 | Cable TV Systems | 1 – 3 – 2 |
| 2105*2101 to 2105*2199 | Courses in this range are additionally developed by the individual colleges or institutes according to the needs of the workplace or the regional strategies. | * - * - * |

Dual Vocational Education (DVE)

| Code | Title | T – P – C |
|-----------|------------------------|-----------|
| 2401-5101 | Electronics Practice 1 | * - * - 3 |
| 2401-5102 | Electronics Practice 2 | * - * - 3 |
| 2401-5103 | Electronics Practice 3 | * - * - 3 |
| 2401-5104 | Electronics Practice 4 | * - * - 4 |
| 2401-5105 | Electronics Practice 5 | * - * - 4 |
| 2401-5106 | Electronics Practice 6 | * - * - 4 |

For the Dual Vocational Education (apprenticeship) of minimum 21 credits, the college and the workplace together analyze the nature of the business of the workplace in order to determine the number of credits, appropriate courses in details, the occupational training plans, and the assessment and evaluation methods for the courses. The minimum total training time at the workplace is 54 hours, which is equivalent to 1 credit.

2.4 Vocational Skills Practical Experience (4 credits)

Select only 2105-8001 Work Practice or, alternatively, select 2105-8002 Work Practice 1 together with 2105-8003 Work Practice 2.

| Code | Title | T – P – C |
|-------------|-----------------|------------------|
| 2105-8001 | Work Practice | * - * - 4 |
| 2105-8002 | Work Practice 1 | * - * - 2 |
| 2105-8003 | Work Practice 2 | * - * - 2 |

2.5 Vocational Skills Development Project (4 credits)

Select only 2105-8501 Project or, alternatively, select 2105-8502 Project 1 together with 2105-8503 Project 2.

| Code | Title | T – P – C |
|-------------|--------------|------------------|
| 2105-8501 | Project | * - * - 4 |
| 2105-8502 | Project 1 | * - * - 2 |
| 2105-8503 | Project 2 | * - * - 2 |

3. Elective Courses

minimum 10 credits

Courses can be chosen from the list below or from any area and program of study provided in the 2013 Curriculum for the Certificate of Vocational Education, according to students' aptitudes and interests. However, individual colleges and institutes can develop additional elective courses in relation to the local community needs and contexts.

| Code | Title | T – P – C |
|------------------------|---|------------------|
| 2XXX*9X01 to 2XXX*9X99 | Course in this range are additionally developed by the individual colleges or institutes according to the needs of the workplace or the regional strategies or further study. | * - * - * |

4. Extracurricular Activities

(2 hours per week)

| Code | Title | T – P – C |
|------------------------|--|------------------|
| 2000-2001 | Rover Scout Activity 1 | 0 – 2 – 0 |
| 2000-2002 | Rover Scout Activity 2 | 0 – 2 – 0 |
| 2000-2003 | Vocational Organization Activity 1 | 0 – 2 – 0 |
| 2000-2004 | Vocational Organization Activity 2 | 0 – 2 – 0 |
| 2000-2005 | Vocational Organization Activity 3 | 0 – 2 – 0 |
| 2000-2006 | Vocational Organization Activity 4 | 0 – 2 – 0 |
| 2000*2001 to 2000*20XX | Courses in this range are additionally developed or arranged by individual colleges, institutes or the workplace. This can be a military activity. | 0 – 2 – 0 |