



# **2013 Curriculum for the Certificate of Vocational Education in Industrial Trades**

## **Machine Maintenance Program**

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

# Structure

## 2013 Curriculum for the Certificate of Vocational Education in Industrial Trades

### Machine Maintenance Program

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

<b>1. Life Skills Courses</b>	<b>minimum 22 credits</b>
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)
<b>2. Vocational Skills Courses</b>	<b>minimum 71 credits</b>
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)
<b>3. Elective Courses</b>	<b>minimum 10 credits</b>
<b>4. Extracurricular Activities</b> (2 hours per week)	
<b>Total</b>	<b>minimum 103 credits</b>

**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)

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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)

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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)

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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 are additionally developed by the individual colleges or institutes.	* - * - *

**1.4 Mathematics Courses** (minimum 4 credits)

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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)

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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 Course** (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**

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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**

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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**

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

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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 course are compulsory.

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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
2100-1006	Basic Electrical and Electronic Work	1 – 3 – 2
2100-1007	Basic Machine Assembly	1 – 3 – 2
2100-1008	Basic Machine Tools	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.

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
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.

<b>Code</b>	<b>Title</b>	<b>T – P – C</b>
2100-1009	Basic Pneumatic and Hydraulic Work	1 – 3 – 2
2111-2001	Drawing for Maintenance Work	1 – 3 – 2
2111-2002	Mechanical Parts	2 – 0 – 2
2111-2003	Mechanical Parts Making and Repairing	1 – 3 – 2
2111-2004	Pneumatics and Hydraulics	1 – 3 – 2
2111-2005	Maintenance	2 – 0 – 2
2111-2006	Preventive Maintenance	1 – 6 – 3
2111-2007	Machine Maintenance	1 – 6 – 3
2111-2008	Machinery Installation	1 – 3 – 2
2111-2009	Maintenance Instruments and Inspection	1 – 3 – 2
2111-2010	Industrial Piping Systems	1 – 3 – 2

## 2.3 Elective Vocational Skills Courses (minimum 21 credits)

Select courses from the following list.

### Industrial Machine Maintenance

Code	Title	T – P – C
2111-2101	Mechanical Mathematics	2 – 0 – 2
2111-2102	Refrigeration and Air Conditioning	1 – 3 – 2
2111-2103	Industrial Lubricants	2 – 0 – 2
2111-2104	Maintenance Welding	1 – 3 – 2
2111-2105	Machine Parts Adaptation	1 – 3 – 2
2111-2106	Machine Parts Maintenance	1 – 3 – 2
2111-2107	Electrical Drawing	1 – 3 – 2
2111-2108	Electrical Machine Maintenance	1 – 3 – 2
2111-2109	Machine Transmission Work	1 – 3 – 2
2111-2110	Power Plant Maintenance	1 – 3 – 2
2111-2111	Materials Handling Maintenance	1 – 3 – 2
2111-2112	Materials Testing	1 – 3 – 2
2111-2113	Jig and Fixture Making	1 – 3 – 2
2111-2114	Pneumatic and Hydraulic Practice	0 – 6 – 2
2111-2115	Maintenance Practice	0 – 6 – 2
2111-2116	Preventive Maintenance Practice	0 – 6 – 2
2111-2117	Machine Maintenance Practice	0 – 6 – 2
2111-2118	Electrical Machine Maintenance Practice	0 – 6 – 2
2111*2101 to 2111*2199	Elective courses in this range are additionally developed by individual colleges or institutes according to the needs of the workplace or the regional strategies.	* - * - *

### Dual Vocational Education (DVE)

Code	Title	T – P – C
2111-5101	Industrial Machine Maintenance Practice 1	* - * - 3
2111-5102	Industrial Machine Maintenance Practice 2	* - * - 3
2111-5103	Industrial Machine Maintenance Practice 3	* - * - 3
2111-5104	Industrial Machine Maintenance Practice 4	* - * - 4
2111-5105	Industrial Machine Maintenance Practice 5	* - * - 4
2111-5106	Industrial Machine Maintenance 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 2111-8001 Work Practice or alternatively select 2111-8002 Work Practice 1 together with 2111-8003 Work Practice 2.

Code	Title	T – P – C
2111-8001	Work Practice	* - * - 4
2111-8002	Work Practice 1	* - * - 2
2111-8003	Work Practice 2	* - * - 2

### 2.5 Vocational Skills Development Project (4 credits)

Select 2111-8501 Project or alternatively select 2111-8502 Project 1 together with 2111-8503 Project 2.

Code	Title	T – P – C
2110-8501	Project	* - * - 4
2110-8502	Project 1	* - * - 2
2110-8503	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	Elective courses in this range are additionally developed by 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

