



2013 Curriculum for the Certificate of Vocational Education in Industrial Trades

Mechatronics Program

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

Structure

2013 Curriculum for the Certificate of Vocational Education in Industrial Trades

Mechatronics Program

The graduates of the Certificate of Vocational Education in Industrial Trades (Mechatronics) 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
2000-1303	Science for Business and Services	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)

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 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

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
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 Work 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
2100-1008	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)

Code	Title	T – P – C
2127-2001	Basic Mechatronics	2 – 0 – 2
2127-2002	Mechatronics Drawing	1 – 2 – 2
2127-2003	Machine Parts in Mechatronics	1 – 3 – 2
2127-2004	Mechatronic Instruments	1 – 3 – 2
2127-2005	Electrical Circuits	2 – 3 – 3
2127-2006	Electronic Devices and Circuits	2 – 3 – 3
2127-2007	Basic Digital Circuits	1 – 3 – 2
2127-2008	Sensors and Transducers	1 – 3 – 2
2127-2009	Electrical Machines and Controls	2 – 3 – 3
2127-2010	Basic Programmable Controllers	2 – 3 – 3

2.3 Elective Vocational Skills Courses (minimum 21 credits)

Mechatronics

Select the courses 1-6 and other courses from the list to meet the credit requirement.

Code	Title	T – P – C
2127-2101	Computer Programming	1 – 2 – 2
2127-2102	Electronic Computer-Aided Drawing	1 – 2 – 2
2127-2103	Basic CNC Technology	2 – 3 – 3
2127-2104	Introduction to Computer-Aided Design	1 – 2 – 2
2127-2105	Pneumatic and Hydraulic Controls	2 – 3 – 3
2127-2106	Basic Robotics	2 – 3 – 3
2127-2107	Basic Microcontrollers	1 – 3 – 2
2127-2108	Mechatronic Maintenance	1 – 3 – 2
2127-2109	Machine Tool Mechanics	2 – 0 – 2
2127-2110	Mechatronics Services	0 – 6 – 2
2127-2111	Mechatronic Mathematics	2 – 0 – 2
2127-2112	Network Computers	1 – 3 – 2
2127-2113	Flexible Manufacturing Systems	1 – 3 – 2
2127-2114	Manufacturing Processes	2 – 0 – 2
2127-2115	Air-Conditioners	1 – 3 – 2
2127-2116	Basic Industrial Instruments	1 – 3 – 2
2127-2117	Pulse and Switching Circuits	1 – 3 – 2
2127-2118	Machine Tools	1 – 3 – 2
2127-2119	Electrical Installation Estimation	2 – 0 – 2
2127-2120	Basic Interfacing	1 – 3 – 2
2127-2121	Basic Power Electronics	1 – 3 – 2
2127-2122	Basic Electric Motor Controls	1 – 3 – 2
2127-2123	Basic Motion Control Systems	2 – 3 – 3
2127-2124	Basic Automatic Controls	1 – 3 – 2
2127*2101 to 2127*2199	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
2127-5101	Mechatronics Practice 1	* - * - 3
2127-5102	Mechatronics Practice 2	* - * - 3
2127-5103	Mechatronics Practice 3	* - * - 3
2127-5104	Mechatronics Practice 4	* - * - 4
2127-5105	Mechatronics Practice 5	* - * - 4
2127-5106	Mechatronics 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 2127-8001 Work Practice or alternatively select 2127-8002 Work Practice 1 together with 2127-8003 Work Practice 2.

Code	Title	T – P – C
2127-8001	Work Practice	* - * - 4
2127-8002	Work Practice 1	* - * - 2
2127-8003	Work Practice 2	* - * - 2

2.5 Vocational Skills Development Project (4 credits)

Select 2127-8501 Project or alternatively select 2127-8502 Project 1 together with 2127-8503 Project 2.

Code	Title	T – P – C
2127-8501	Project	* - * - 4
2127-8502	Project 1	* - * - 2
2127-8503	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	Courses in this range as additionally developed by the individual college or institute.	* - * - *

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.	