

Production Technology

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

The program aims at providing students with knowledge, skills, abilities, attitudes and experience which will enable them to perform as competent technicians in the field of Production 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 Production 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 production 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 Production 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. Interpret and design drawing of production work
7. Identify appropriate materials and techniques for production work
8. Measure and inspect dimensions of workpiece

Machine Tool Specialization

9. Interpret and design drawing of mechanical parts
10. Select appropriate materials and techniques for making mechanical parts
11. Plan and control mechanical part production
12. Measure and inspect mechanical parts in production process

Jig and Fixtures Specialization

9. Interpret and design drawing jig and fixture
10. Select appropriate materials and techniques for making jig and fixtures
11. Plan and control jig and fixtures production
12. Measure, check and defect jig and fixture production
13. Assemble, install, test, analyze and solve problems in jig and fixture production

Die-making specialization

9. Interpret and design drawing die making
10. Select appropriate materials and techniques for die-making production
11. Plan and control die-making production
12. Measure and Inspect die-making production
13. Assemble, install, test, analyze and solve problems in die-making production

Mold – making specialization

9. Interpret and design drawing of mold-making
10. Select appropriate materials and techniques for mold-making production
11. Plan and control mold-making production
12. Measure and Inspect mold-making production
13. Assemble, install, test, analyze and solve problems in mold-making production

Agricultural Machinery specialization

9. Interpret and design drawing of agricultural machinery
10. Design agricultural machinery
11. Plan and control agricultural machinery production
12. Assemble, install, test, analyze and solve problems in agricultural machinery

Environmental Studies Specialization

9. Treat the water from natural resources by physical and chemical methods for consumption
10. Treat industrial waste water and maintain the waste water treatment system
11. Conduct air pollution control
12. Conduct noise pollution and vibration control
13. Manage hazardous material and waste
14. Conduct clean technology in organization

Program Structure
2003 Curriculum for the Diploma of Vocational Education
Area of Study: Industrial Trades
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For the fulfillment of the program, graduates should have completed at least 90 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)		60 credits
2.1 Basic Vocational Courses	14 credits	
2.2 Core Vocational Courses	22 credits	
2.3 Specialized Vocational Courses (not less than)	20 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)		90 credits

Entry into this program requires satisfactory completion of the Vocational Education Certificate in Mechanical -Machine Tool and Maintenance program, Machine Tool Trade 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)
3100-0004	Technical Materials	2	(2)
3100-0005	Precision Measurements	2	(3)
3102-0001	Machine Element	3	(3)
3102-0002	Basic Machine Tools	3	(5)
3102-0003	Machine Tools s	3	(5)
3102-0004	Computer – aided Drawing	2	(3)
	Total	22	(34)

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) 60 credits

2.1 Basic Vocational Courses 14 credits

Students must take the compulsory courses (3100-0101, 3100-0107, 3100-0151) and select one course from 3000-100X and one from 3000-020X to fulfill the requirements.

Code	Course Title	Cr	(Hr)
3100-0101	Engineering Mechanics	3	(3)
3100-0107	Strength of Materials	3	(3)
3100-0151	Safety and Pollution Control	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 22 credits

Students must take 8 compulsory courses(3102-2001 to 2004,3100-0108,0112,0115,0117) and select courses from the remainder to fulfill the requirements.

Code	Course Title	Cr	(Hr)
3102-2001	Machining Processes	3	(5)
3102-2002	CNC Program	2	(4)
3102-2003	CNC Machine Tools	2	(4)
3102-2004	CAD/CAM Technology	3	(5)
3100-0108	Machine Elements	3	(3)
3100-0112	Industrial Materials	2	(3)
3100-0115	Manufacturing Processes	2	(2)
3100-0117	Engineering Metrology	2	(3)
3100-0118	Machine Design	3	(3)
3100-0154	Work Study	2	(2)

2.3 Specialized Vocational Courses (not less than) 20 credits

Students must take at least 20 credits from the Specialized Vocational Courses. These can be taken from one field of specialization or across different fields of specialization.

1. Machine Tools Specialization

Code	Course Title	Cr	(Hr)
3102-2101	Mechanical drawing	2	(3)
3102-2102	Machine Tools 1	3	(5)
3102-2103	Machine Tools 2	3	(5)
3102-2104	Machine Tools 3	3	(5)
3102-2105	Machine Tools 4	3	(5)
3102-2106	Machine Tool Technology	2	(3)
3102-2107	Automatic Machine Tool	3	(5)
3102-2108	Advanced Machine Tool Process	3	(5)
3102-2109	Computer-aided Manufacturing	2	(4)
3102-2110	Mechanical Fitting	3	(5)
3102-2111	Cost Estimation	2	(2)
3102-2112	Cutting Tool Production	3	(5)
3102-2113	Automatic Production System	3	(5)
3102-2114	Heat Treatment	3	(5)
3102-4101	Machine Tool Apprenticeship 1	5	(*)
3102-4102	Machine Tool Apprenticeship 2	5	(*)
3102-4103	Machine Tool Apprenticeship 3	5	(*)
3102-4104	Machine Tool Apprenticeship 4	5	(*)

2. Jig and Fixtures Specialization

Code	Course Title	Cr	(Hr)
3102-2201	Jig and fixture Drawing	2	(3)
3102-2202	Drill Jig Production	3	(5)
3102-2203	Machine Tool Jig and Fixture Production	3	(5)
3102-2204	Assembly Jig and Fixture Production	3	(5)
3102-2205	Checking Fixture Production	3	(5)
3102-2206	Jig and Fixture Design	2	(3)
3102-2107	Automatic Machine Tool	3	(5)
3102-2109	Computer-aided Manufacturing	2	(4)
3102-4201	Jig and Fixture Apprenticeship 1	5	(*)
3102-4202	Jig and Fixture Apprenticeship 2	5	(*)
3102-4203	Jig and Fixture Apprenticeship 3	5	(*)
3102-4204	Jig and Fixture Apprenticeship 4	5	(*)

3. Die-making Specialization

Code	Course Title	Cr	(Hr)
3102-2301	Die Drawing	2	(3)
3102-2302	Blanking and Piercing Die Production	3	(5)
3102-2303	Bending and Forming Die Production	3	(5)
3102-2304	Compound and Drawing Die Production	3	(5)
3102-2305	Progressive Die Production	3	(5)
3102-2306	Die Design	2	(3)
3102-2307	Die Maintenance and Repair	3	(5)
3102-2308	Die Technology	2	(3)
3102-2309	CAD/CAM of Computer-aided Die Manufacturing	2	(4)
3102-4301	Die Making Apprenticeship 1	5	(*)
3102-4302	Die Making Apprenticeship 2	5	(*)
3102-4303	Die Making Apprenticeship 3	5	(*)
3102-4304	Die Making Apprenticeship 4	5	(*)

4. Mold-making Specialization

Code	Course Title	Cr	(Hr)
3102-2401	Mold Drawing	2	(3)
3102-2402	Injection Mold Production	3	(5)
3102-2403	Two-plate Mold Production	3	(5)
3102-2404	Split Mold Production	3	(5)
3102-2405	Three-plate Mold Production	3	(5)
3102-2406	Mold Maintenance and Repair	3	(5)
3102-2407	Injection Mold Design	2	(3)
3102-2408	Plastic Technology	2	(3)
3102-2409	Computer-aided of Injection Mold Manufacturing	2	(4)
3102-2410	Blow Mold Production	3	(5)
3102-2411	Compression Mold Production	3	(5)
3102-2412	Extrusion Mold Production	3	(5)
3102-2413	Thermoforming Mold Production	3	(5)
3102-2414	Rubber Mold Production	3	(5)
3102-4401	Mold Making Apprenticeship 1	5	(*)
3102-4402	Mold Making Apprenticeship 2	5	(*)
3102-4403	Mold Making Apprenticeship 3	5	(*)
3102-4404	Mold Making Apprenticeship 4	5	(*)

5. Agricultural Machinery Specialization

Code	Course Title	Cr	(Hr)
3102-2501	Agricultural Machinery Drawing	2	(3)
3102-2502	Agricultural Machinery Parts Assembling	3	(5)
3102-2503	Plant Machinery Design	2	(3)
3102-2504	Plant Machinery Production	3	(5)
3102-2505	Aquatic animal Machinery Design	2	(3)
3102-2506	Aquatic animal Machinery Production	3	(5)
3102-2507	Poultry Machinery Design	2	(3)
3102-2508	Poultry Machinery Production	3	(5)
3102-2509	Cattle Machinery Design	2	(3)
3102-2510	Cattle Machinery Production	3	(5)

3102-2511	Industrial Agricultural Machinery Design	2	(3)
3102-2512	Industrial Agricultural Machinery Production	3	(5)
3102-4501	Agricultural Machinery Apprenticeship 1	5	(*)
3102-4502	Agricultural Machinery Apprenticeship 2	5	(*)
3102-4503	Agricultural Machinery Apprenticeship 3	5	(*)
3102-4504	Agricultural Machinery Apprenticeship 4	5	(*)

6. Environmental Studies Specialization

Code	Course Title	Cr	(Hr)
3100-0221	Fundamental of Environmental Chemistry	2	(3)
3100-0222	Fundamental of Environmental Microbiology	2	(3)
3100-0223	Basic Fluid Mechanics and Thermodynamics	3	(3)
3100-0224	Wastewater Treatment and Control Techniques	3	(5)
3100-0225	Air Pollution Control Techniques	2	(3)
3100-0226	Noise and Vibration Control Techniques	2	(3)
3100-0227	Hazardous Waste Management	2	(4)
3100-0228	Clean Technology for Technicians	2	(3)

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)
3102-6001	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.