MINUTES OF MEETING BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE REPUBLIC OF TURKEY ON
JAPANESE TECHNICAL COOPERATION
FOR
THE PROJECT ON STRENGTHENING THE PROGRAM OF
EXPANDING INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT

The Japan International Cooperation Agency (hereinafter referred to as "JICA") had a series of discussions through the Resident Representative of JICA in the Republic of Turkey with the Turkish authorities concerned for the purpose of working out the details of the technical cooperation project concerning "the Project on Strengthening the Program of Expanding Industrial Automation Technologies Department".

As a result of the discussions, JICA and the Turkish authorities concerned agreed to summarize the matters referred to in the document attached hereto as a supplement to the Record of Discussions signed on May 7nd, 2007.

Ankara, May 7, 2007

水落俊一

Mr. Shunichi Mizuochi
Resident Representative,
JICA Turkey Office,
Japan International Cooperation Agency,
Japan

Mr. Huseyin ACIR
Director General,
Directorate General of Technical and Vocational Education
Ministry of National Education
The Republic of Turkey

THE ATTACHED DOCUMENT

I. PROJECT DESIGN MATRIX

JICA explained that the Project Design Matrix (hereafter referred to as the "PDM") is commonly used in Japanese technical cooperation in order to manage and implement projects efficiently and effectively. It will also be used as a reference for monitoring and evaluating the Project.

As a result of discussions, both sides agreed to apply the PDM as shown in ANNEX I to the Project with the following understanding:

1. The PDM is a logically designed matrix which defines the initial understanding of the framework of technical cooperation for the Project and indicates the logical steps toward the achievement of the Project purpose.
2. The PDM is to be flexibly revised according to the progress and achievements of the Project, upon approval by the Joint Coordinating Committee.
3. XX in the PDM indicators need to be identified the appropriate quantities through base-line survey in the early stages of the project.

II. PLAN OF OPERATION

The Plan of Operation has been tentatively formulated according to the Record of Discussions. The Plan of Operation for the entire period of the Project is shown in ANNEX II. The Annual Plan of Operation is to be drafted by both the Turkish and Japanese experts according to the Plan of Operation and is to be submitted to the Joint Coordinating Committee. The activities are subject to change within the scope of the Record of Discussions, if necessity arises, in the course of Project implementation.

III. ADMINISTRATION OF THE PROJECT

The Organizational Chart of the Project is shown in ANNEX III.

IV. PROJECT DOCUMENT

Both the Turkish and the Japanese sides agreed the Project Document for rationalization of the plan and justification of the project implementation. The Project Document is attached herewith as ANNEX IV.

V. OTHER ISSUES

Both sides agree on the following matters related to the input of the Project;

1. Organization structure of the TTC in Izmir AML, including assignments of necessary personnel, should be established for the purpose of smooth management of the TTC. Teachers of Izmir AML should be also increased for the purpose of stable management of the TTC.
2. Necessary equipment should be installed by Turkish side to the laboratories of the TTC for smooth implementation of teacher training courses.
3. The Project should be implemented based on the technical and human resources which had been developed under the former Project.
4. The activities of the Project should be led by Turkish side, in which Japanese side encourages its activities.

ANNEX I	PROJECT DESIGN MATRIX (PDM)
ANNEX II	PLAN OF OPERATION
ANNEX III	ORGANIZATIONAL CHART
ANNEX IV	PROJECT DOCUMENT

ANNEX 1 PROJECT DESIGN MATRIX

Project Title: The Project on Strengthening the Program of Expanding Industrial Automation Technologies Department (SPREAD) Version. No. 2.0
Duration: August 2007 to September 2010 Date: 18 April 2007
Target Groups: Management staff, lecturers of Teachers Training Center (TTC) of Izmir Mazhar Zorlu Anatolian Vocational High School, teachers to be trained at the
Indirect Target Groups: Teachers to be trained at the TTC

Narrative Summary	Objectively Verifiable Indicators[1]	Means of Verification	Important Assumptions
Super Goal Technicians of industrial automation technologies (IAT)are raised and needs of the industrial sector in Turkey for them are substantially satisfied	XX graduates of IAT departments are employed to the relevant factories every year.	Records of carrier guidance committee of schools with IAT Department	
Overall Goal Vocational education and training (VET) for IAT at the expansion schools is practiced effectively	XX students graduate from IAT Departments.	Records of carrier guidance committee of the expansion schools	Turkish industrial sector continue to develop in same growth rate as present
Project Purpose Teacher training system of the TTC is established.	<Indicator on teacher training course at the TTC> 1. XX% of participants assess training courses are practically usable for their lectures and practices for IAT. 2. XX % of participants complete teacher training course. 3. Average score of tests <Indicator on organization of the TTC> 4. Procedures on management of teacher training course are prepared. 5. Percentage of implemented teacher training courses compared with plan. <Indicator on long term strategy> 6. Long term strategy of the TTC receives a due consideration from Ministry of National Education.	1. Teacher training course assessment reports by TTC 2. Records for the teacher training courses of TTC 3. Records for the teacher training courses of TTC 4. Interview with the MoNE	Entry of students to IAT Department in the expansion schools is kept in the present level at least Number of expansion schools is not reduced.
Output 1. Teacher training program of the TTC is planned. 2. Teacher training courses of the TTC are	1-1. Number of designed teacher training courses 1-2. Number of designed teacher training textbooks 2-1. Number of implemented teacher	1. Records for the teacher training courses of TTC 2. Records for the teacher	Counterparts remain in TTC

[1]

ANNEX 1 PROJECT DESIGN MATRIX

implemented. 3. Teacher training courses of the TTC are evaluated. 4. Planning capacity of the TTC is strengthened.	training courses 3-1. Evaluation on teacher training courses is conducted XX times 3-2. Monitoring is conducted XX times at all the expansion schools 4-1. Long term strategy for TTC is finalized.	training courses of TTC 3. Records for monitoring 4. Long term strategy plan by TTC	
Activities 1-1 Baseline survey of IAT department of expansion schools is conducted. 1-2 Organizational structure of the TTC is arranged. 1-3 Mid-term training plan (2006-2011) is reviewed. 1-4 Module textbook is drafted. 1-5 Teacher training courses are planned. 1-6 Teacher training textbook is drafted. 2-1 Equipment for the TTC is installed. 2-2 Orientation for participants is conducted. 2-3 Teacher training courses are implemented. 2-4 Seminars on management of IAT Department are conducted for the expansion schools. 3-1 Standard of evaluation of teacher training courses and evaluation materials are drafted. 3-2 Teacher training courses are evaluated properly. 3-3 Monitoring on VET of IAT at the expansion schools is implemented. 3-4 The teacher training course and training textbook is reviewed. 4-1 Role of the TTC in the Long term strategy is identified. 4-2 Long term strategy to operate the TTC is drafted and submitted to GDTVE of the MoNE	**Inputs** Turkish side: • Administrative personnel • Project counterparts -Trainers of TTC -Coordinator • Office and office equipment for JICA experts • Training equipment for TTC • Project costs -Expenses for teacher training courses -Salaries and other allowances for the Turkish staffs -Customs clearance, inland handling of the Project equipment provided by JICA -Expenses for maintenance of the Project facilities and equipment -Expenses for electricity, water, gas, fuel and other contingencies -Other necessary local expenses of the Project Japanese side: • Experts • Supplemental equipment • Counterpart training in Japan • Supplemental expenses		**Important Assumptions** Teachers of IAT Department in the expansion schools are appointed in time **Preconditions** Necessary budgets of TTC are appropriately allocated. Appropriate number of the project counterparts is assigned.

ANNEX 2 PLAN OF OPERATION

Project Title: The Project on Strengthening the Program for Expanding Industrial Automation Technologies Department

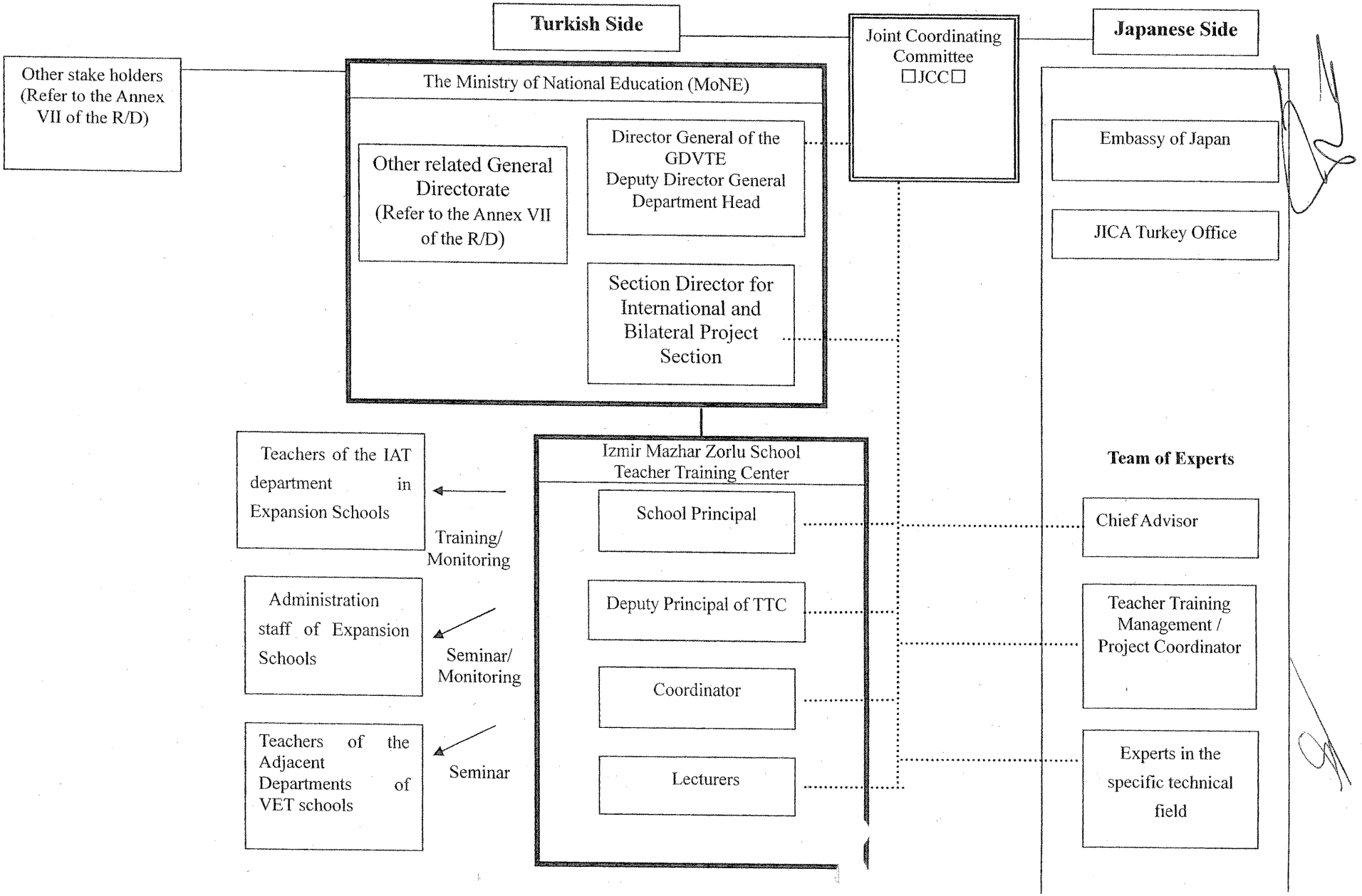
Version. No. 2.0

Duration: August 2007 to September 2010

Date: 18 April 2

Year	2007				2008				2009				2010		
Month	1/2/3	4/5/6	7/8/9	10/11/12	1/2/3	4/5/6	7/8/9	10/11/12	1/2/3	4/5/6	7/8/9	10/11/12	1/2/3	4/5/6	7/8/9
Project Activities															
1-1 Baseline survey of IAT department of expansion schools is conducted.															
1-2 Organizational structure of the TTC is arranged.															
1-3 Mid-term training plan (2006-2011) is reviewed.															
1-4 Module textbook is drafted.															
1-5 Teacher training courses are planned.															
1-6 Teacher training textbook is drafted.															
2-1 Equipment for the TTC is installed.															
2-2 Orientation for participants is conducted.															
2-3 Teacher training courses are implemented.															
(Teacher training courses for adjacent departments)															
2-4 Seminars on management of IAT Department are conducted for the expansion schools.															
3-1 Standard of evaluation of teacher training courses and evaluation materials are drafted.															
3-2 Teacher training courses are evaluated properly.															
3-3 Monitoring on VET of IAT at the expansion schools is implemented.															
3-4 The teacher training course and training textbook is reviewed															
4-1 Role of the TTC in the Long term strategy is identified.															
4-2 Long term strategy to operate the TTC is drafted and submitted to GDTVE of the MoNE															
JCC			△		△		△		△		△		△		△

Annex III Organizational Structure of the Project



Republic of Turkey
Japan International Cooperation Agency (JICA)

The Project on Strengthening the Program of Expanding Industrial Automation Technologies Departments (SPREAD)

Project Document

First Edition

April 2007

Republic of Turkey
Japan International Cooperation Agency (JICA)

The Project on Strengthening the Program of Expanding Industrial Automation Technologies Departments (SPREAD)

Project Document

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April 2007

Note: This document is jointly prepared by the Turkish Authorities Concerned and JICA. It describes the background of project and project plan. It will be reviewed with the progress of project Activity, when the necessity arises.

Table of Contents

Abbreviations

AML	Anadolu Meslek Liseleri (Anatolia vocational high school)
ATL	Anadolu Teknik Lisesi (Anatolia technical high school)
CNC	Computerized numerical control
EML	Endüstri Meslek Lisesi (Industrial Vocational high school)
GDTVE	General Directorate of Technical and Vocational Education
IAT	Industrial automation technologies
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
JCC	Joint Coordinating Committee
KOSGEB	Small and Medium Industry Development Organization
LLL	Life long learning
MEGEP	Türkiye'deki Mesleki Eğitim ve Öğretim Sistemini Güçlendirme Projesi (Strengthening the Vocational Education and Training System in Turkey)
MESS	Turkish Metal Goods Manufacturers Syndicate
MoNE	Ministry of National Education
MVET	Modernization of Vocational Education and Training in Turkey Project
OVI	Objectively Verifiable Indicators
PLC	Programmable logic controller
SPO	State Planning Organization
SPREAD	Project on Strengthening the Program of Expanding Industrial Automation Technologies Departments
SVET	Strengthening the Vocational Education and Training System in Turkey
TL	Teknik Lise (Technical high school)
TTC	Teachers Training Center of İzmir Mazhar Zorlu AML/ATL
TVET	Technical and vocational education and training
VET	Vocational education and training

Ex-Ante Evaluation Sheet

1. Project Title: The Project on Strengthening the Program of Expanding Industrial Automation Technologies Departments (SPREAD)

2. Project Overview

(1) Project Objectives

The Project plans, implements, evaluates teacher training and prepare long term strategy of the Teacher Training Center (TTC) for the purpose of establishing the teacher training system at the TTC.

The Project contributes to meet the labor demand of industrial sector in Turkey on technicians with industrial automation technologies by the establishment of teacher training system at the TTC.

(2) Cooperation Period: Three (3) years, from August 2007 to September 2010

(3) Total Cost: USD 2.9Million (planned disbursement by Japanese side)

(4) Partner Country's Implementation Organization: Ministry of National Education (MoNE)

(5) Supporting Organization in Japan: To be decided.

(6) Beneficiaries and Expected Scale of Project Benefits

(7) Direct Beneficiaries : Teacher Training Center at İzmir Mazhar Zorlu School

Indirect Beneficiaries: 300 teachers in the expansion schools
Students of IAT department
Companies of Industrial Sector

3. Necessity of the Technical Cooperation

(1) Present Situations and Challenges in VET

Since 1990s, the national economy in Turkey has been rapidly developed. Despite of the Gulf War, high inflation and the Russian crisis in the decade, the average annual growth of GDP of Turkey was well over 3%. After 2001, when the severest economic crisis occurred, the GDP has maintained a stable growth as shown in 6% growth per annum in 2003 and 9% in 2004. The manufacturing sector has contributed almost a quarter of the GDP as indicated in share of the manufacturing sector in the GDP that was 22.4% in 1990, 23.8% in 1995, 23.8% in 2000 and 25.1% in 2004.

The previous Project, "the Project on Establishment of Industrial Automation Technologies Departments in Anatolian Technical High Schools" established the Industrial Automation Technologies Departments as an extension model in İzmir and Konya. Curriculum of IAT departments is mainly composed of mechatronics and computer network, and it systematized the various industrial automation technologies. The MoNE established IAT departments at other 20 AML, and the TTC as a part of İzmir Mazhar Zorlu School for the teacher training.

Although the TTC has started the teacher training course on 2006, several tasks are arisen such as preparation of teacher training textbook, arrangement of teacher training course and evaluation method of

teacher training course.

(2) National Policies for VET in the Partner Country

The Medium-Term Program (2007 to 2009) is aimed at development of the human resources as one of the major program targets. In the program, the human resources are planned to develop from various aspects that include increasing of employability, reducing of regional development disparities, development of the education sector, and others.

Basic policies for vocational education and training (VET) in aspect of increasing of employability include (1) acceleration of transition to a modular and flexible VET system necessary for meeting the labor force required by the market, (2) strengthening of the cooperation between education and labor market, (3) support for training of human resources for information and communication technologies particularly for enabling employment of the unemployed young population by means of using distant and non-formal education opportunities, and others.

(3) Relevance to the ODA Policy of Japan

"Human resource development for middle income countries" is prioritized in JICA country program. The Project is included in JICA Cooperation program, called "Improvement of Vocational Education and Training Program", which aim at improving VET for responding to labor demand of the industrial sector.

The previous Project, "the Project on Establishment of Industrial Automation Technologies Departments in Anatolian Technical High Schools" established the Industrial Automation Technologies Departments as an extension model. This Project aims at supporting the extension of the model established at the previous Project.

4. Framework of Technical Cooperation

(1) Objective of Cooperation

Project Purpose: Teacher training system of the TTC is established.

Objectively Verifiable Indicator (OVI).[1]

<Indicator on teacher training course at the TTC>

- XX% of participants assess training courses are practically usable for their lectures and practices for IAT.
- XX % of participants complete teacher training course.
- Average score of tests

[1] Numerical indicator will be specified at the first Joint Coordinating Committee based upon baseline survey.

<Indicator on organization of the TTC>

- Procedures on management of teacher training course are prepared.
- Percentage of implemented teacher training courses compared with plan

<Indicator on long term strategy>

- Long term strategy of the TTC receives a due consideration from Ministry of National Education.

Overall Goal:

Vocational education and training (VET) for IAT at the expansion schools is practiced effectively.

OVI:

XX students will graduate from IAT Departments.

Outputs and Activities

Output 1 Teacher training program of the TTC is planned.

OVI - Number of designed teacher training courses

- Number of teacher training textbooks

Activity 1-1 Baseline survey of IAT department of expansion schools is conducted.

Activity 1-2 Organizational structure of the TTC is arranged.

Activity 1-3 Mid-term training plan (2006-2011) is reviewed.

Activity 1-4 Module textbook is drafted.

Activity 1-5 Teacher training courses are planned.

Activity 1-6 Teacher training textbook is drafted.

Output 2 Teacher training courses of the TTC are implemented.

OVI: Number of implemented teacher training courses

Activity 2-1 Equipment for the TTC is installed.

Activity 2-2 Orientation for participants is conducted.

Activity 2-3 Teacher training courses are implemented.

2-3-1 Teacher training courses for IAT Departments are implemented.

2-3-2 Teacher training courses for the adjacent departments (summer seminars) are implemented.

Activity 2-4 Seminars on management of IAT Department are conducted for the expansion schools.

Output 3 Teacher training courses of the TTC are evaluated.

OVI - Evaluation on teacher training courses is conducted XX times.

- Monitoring is conducted XX times at all the expansion schools.

Activity 3-1 Standard of evaluation of teacher training courses and evaluation materials are drafted.

Activity 3-2 Teacher training courses are evaluated properly.

Activity 3-3 Monitoring on VET of IAT at the expansion schools is implemented.

Activity 3-4 The teacher training course and training textbook is reviewed.

Output 4 Planning capacity of the TTC is strengthened.

OVI: The long term strategy of the TTC is finalized.

Activity 4-1 Role of the TTC in the Long term strategy is identified.

Activity 4-2 Long term strategy to operate the TTC is drafted and submitted to GDTVE of MoNE

Input

Japanese Side:

Experts, supplemental equipment, counterpart training in Japan, supplemental expenses

Turkish Side:

Administrative personnel, project counterparts, office and office equipment for JICA experts, training equipment for the TTC, project costs

(4) Important Assumptions and Pre-conditions

(a) Assumptions for Attaining the Outcomes

Teachers of IAT Department in the expansion schools are appointed in time

(b) Assumptions for Attaining the Project Purpose

A majority of the counterparts remain in the TTC

(c) Pre-conditions

Necessary budgets of the TTC are appropriately allocated.

Appropriate number of the project counterparts is assigned.

5. Ex-ante Evaluation

(1) Relevance

Relevance of the Project is high because of the following points.

The Medium Term Program (2007 - 2009) prioritizes improvement of the human resources. Improvement of human resources and increasing employability are main target of the program. The

Project has goals that are highly relevant to these national priority strategies.

As shown in the various labor market studies of the manufacturing sector, the labor force in the automation technologies field is insufficient in Turkey. The Project, aiming at teacher training for the IAT department, matches the demand of manufacturing industry.

Human resource development for middle income countries is prioritized in JICA country program. The Project is included in JICA Cooperation program, called "Improvement of Vocational Education and Training Program", which aim at improving VET for responding to labor demand of the industrial sector.

(2) Effectiveness

Effectiveness of the Project is expected because of the following points.

Output of Project includes not only planning, implementing and evaluating the training courses, but also strengthening of planning capacity for the TTC. Sufficient outputs are incorporated in the project plan for achieving the project purpose.

The project purpose is "Teacher training system of the TTC is established". Because The OVI include not only the indicators on the teacher training courses, institutional management of the TTC, but also finalizing long term strategy of the TTC, the project purpose is clearly defined.

(3) Efficiency

The Project is expected to be implemented efficiently because of the following points.

Budget for construction of the TTC building and procurement of the training equipment for the TTC and IAT departments of the expansion schools is allocated by the Government of Turkey, as well as expenditures for implementation of the teacher training courses that include travel expenses of the training participants. Therefore Turkish side will provide necessary input for the Project.

Since the counterparts to be assigned for the Project have received a series of training from the Japanese experts in the precedent Project, the total input from Japanese side will be more efficient.

Important Assumptions for attaining the output, "Teachers of IAT Department in the expansion schools are appointed in time", will be satisfied, because the MoNE assign necessary teachers to IAT departments.

(4) Impact

The impact of the Project is expected as follows.

The Project will conduct teacher training courses for approximately 300 teachers, however the seminar for adjacent departments will be held.

In Turkey, economics in western part is developed. On the other hand, economics in eastern part is in the process of developing. Because the expansion schools are chosen in various regions of Turkey, the Project will contribute the correction of regional disparity.

(5) Sustainability

Sustainability of the Project is expected to be high because of the following points.

The MoNE's initiative to undertake the expansion program is strong as indicated in a fact that it has already started the teacher training.

In the Project, as Japanese expert supports Turkish side in the respect of technical advice on module textbook writing, development of teacher training textbook, and center management, the ownership of Turkish side is respected.

6. Measures for Alleviation of Poverty and Gender Issues

(1) Poverty Alleviation

In Turkey, economics in western part is developed. On the other hand, economics in eastern part is in the process of developing. Because the expansion schools are chosen in various regions of Turkey, the Project will contribute the correction of regional disparity.

(2) Gender

In the teachers of IAT departments at İzmir AML, 2 teachers are female. The gender balance is considered on the selection of lectures of the Project.

7. Lessons form the Past Projects

The previous Project developed the textbooks of IAT departments. As the work load of the development was heavy, it was recognized that it is necessary to consider the work load on the project planning. The Project includes development of module textbook and teacher training textbook as project activities. Because the module textbook is being developed by Turkish side, the Japanese experts will provide technical advice. Teacher training textbook will be prepared with utilizing the textbook developed by the previous Project and other related materials.

8. Time Schedule of Evaluation

Mid-term Evaluation: Scheduled around in February 2009

Final Evaluation: Scheduled around in February 2010

1. Introduction

Since 1990s, the national economy in Turkey has been rapidly developed. Despite of the Gulf War, high inflation and the Russian crisis in the decade, the average annual growth of GDP of Turkey was well over 3%. After 2001, when the severest economic crisis occurred, the GDP has maintained a stable growth as shown in 6% growth per annum in 2003 and 9% in 2004. The manufacturing sector has contributed almost a quarter of the GDP as indicated in share of the manufacturing sector in the GDP that was 22.4% in 1990, 23.8% in 1995, 23.8% in 2000 and 25.1% in 2004.

The previous Project, “the Project on Establishment of Industrial Automation Technologies Departments in Anatolian Technical High Schools” established the Industrial Automation Technologies Departments as an extension model in İzmir and Konya. Curriculum of IAT departments is mainly composed of mechatronics and computer network, and it systematized the various industrial automation technologies. The Ministry of National Education (MoNE) established IAT departments at other 20 AML, and the TTC as a part of İzmir Mazhar Zorlu School for the teacher training.

Although the TTC has started the teacher training course on 2006, several tasks are arisen such as preparation of teacher training textbook, arrangement of teacher training course and evaluation method of teacher training course.

Regarding to the establishment of Teacher Training Center, the Turkish Government has requested the technical cooperation to Japanese Government on August 2005. Responding to the request, JICA conducted survey on labor demand of IAT at 4 cities (Ankara, Eskisehir, Bursa, Gebze). On January 2007 Pre-Evaluation team is dispatched for the consultation on the detail of project plan and the pre-evaluation of project.

This document is jointly prepared by the Turkish Authorities Concerned and JICA. It describes the background of project and project plan. It will be reviewed with the progress of project Activity, when the necessity arises.

2. Project Backgrounds

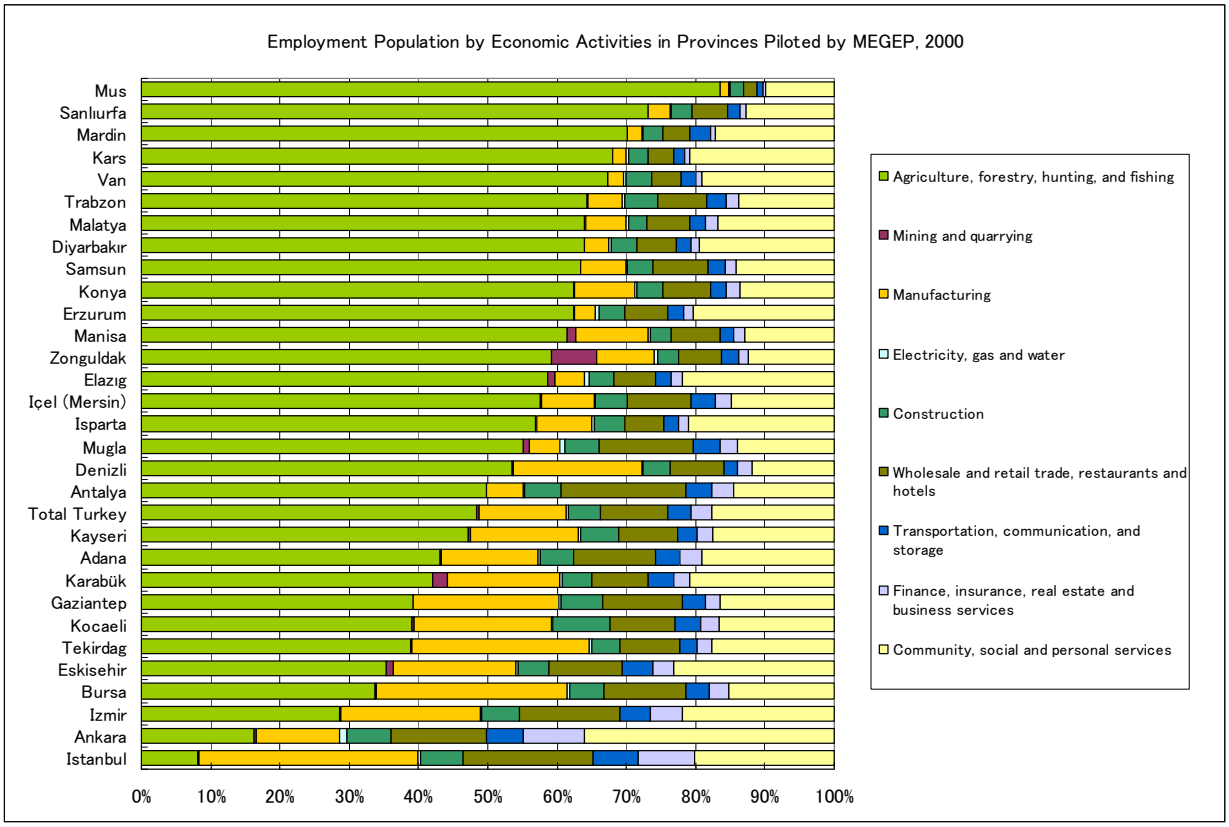
2-1 Socio-economic Conditions

(1) Social Situations

According to the 2000 census, a total population of Turkey reached at 67,800,000 persons in 2000. The population growth rate in the year was of 1.83 %. The rates had been considerably decreased in the past years, though it is still at a higher level compared with the industrialized nations in the world. With a growth of the industrialized economy, inflow of the population to urban areas has become remarkable. This resulted in a great change in share of the population between rural and urban areas; in 1960, 32 % of the population had their residence in urban areas and 68 % in rural areas. In 2000, this had been reversed to 65 % in urban areas and 35 % in rural areas. As a result, income gaps have been arisen between the urban and rural areas.

The unemployment rate has been high in Turkey for many years, and it was 12.4 % in 2004. Because of a higher unemployment rate of the youth, it presents a serious social problem in the country. By the 2000 census, the employment population that includes the primary industry was 25,997,000 persons in the country. As shown in the following figure, the employment population by economic activities is different among the provinces.

Figure 1



Source: ”General Censuses of Population”, 2000

While the employment population in the manufacturing sector to all the sectors was 32.9% in Istanbul Province, it was much lower, only 2.7%, in Van Province. The national average of the employment population of the manufacturing sector was 12.6%. In many of the provinces in the eastern and the south eastern region, the employment in the manufacturing sector was lower than the average. There also exists similar difference among 20 provinces where the Anatolia vocational high schools targeted are situated. Among 20 provinces, those where a percentage of employment population in the manufacturing sector is larger than the national average are Istanbul, Ankara, Bursa, Eskisehir, Tekirdag, Kocaeli, Gaziantep, Adana and Kayseri. Those where the percentage is lower than the national average are Antalya, Denizli, Mersin, Erzurum, Konya, Malatya, Van and Sanliurfa. Afyon, Kahramanmaras and Ordu that are not included in the above figure are also lower than the national average. The main industrial development is seen in the provinces in Western Marmara Region, and less developed economics in the eastern and the south eastern provinces. Economic disparity between eastern and western regions poses one of the challenges in the national development plan.

(2) Economic Situations

Since 1990s, the national economy in Turkey has been rapidly developed. Despite of the Gulf War, high inflation and the Russian crisis in the decade, the average annual growth of GDP of Turkey was well over 3%. After 2001, when the severest economic crisis occurred, the GDP has maintained a stable growth as shown in 6% growth per annum in 2003 and 9% in 2004. The manufacturing sector has contributed almost a quarter of the GDP as indicated in share of the manufacturing sector in the GDP that was 22.4% in 1990, 23.8% in 1995, 23.8% in 2000 and 25.1% in 2004.

Economic Aggregates in Turkey

- GNP: 299.5 billion US$ (4,172 US$ per capita) in 2004
- Foreign exchange: 1.00US$ = around 1.40YTL (New Turkish Lira) in January 2007
- Economic growth rate: 9.9％ in 2004 (government forecast for 2005 is 5.0％)
- Inflation: 9.2％ in 2004 (target in 2005 is 8％)
- Foreign currency reserve: 53.6 billion US$ in end of 2004
- Debt/GNP ratio: 63.5% in end of 2004 (government forecast for 2005 is 60.0％)
- Tourists: 17,510,000 in 2004 (25％ increased from the previous year)

Source: Ministry of Foreign Affairs, January 2006, and others

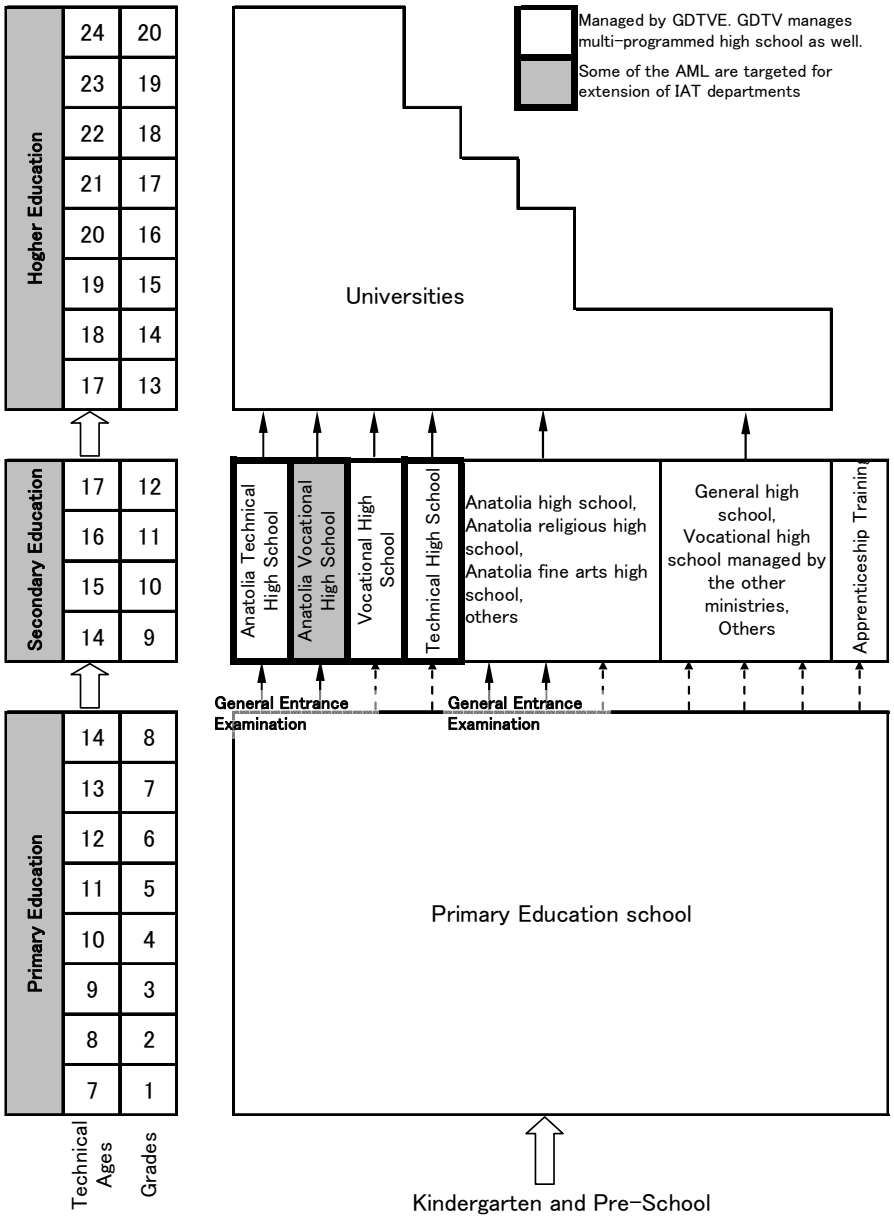
2-2 Education System in Turkey

2-2-1 Education System and Administration

The education system for the primary to higher education in Turkey is shown in Figure 2. The MoNE administers all the public education in the country. The organization chart of the MoNE is shown in Figure 3. The secondary education is divided into general education and vocational education. As of 2005/2006

academic year (starting in September), there were 4,029 vocational high schools in Turkey. High schools of the industrial field are administered by the General Directorate of Technical and Vocational Education (GDTVE[2]) of the MoNE. (The organization chart of GDTVE is as shown in Figure 4.) The GDTVE administers Anatolian Technical High School (ATL), Anatolian Vocational High School (AML), Technical High School (TL). All high schools offer a four-year course as of 2006-2007 education year. High schools titled with "Anatolia" admit students who could pass the general entrance examination in the country and allocate more credit hours for foreign language than other high schools. In 2005/2006 academic year, the high schools administered by GDTVE totaled 1,580[3] with enrollment of 474,715 students.

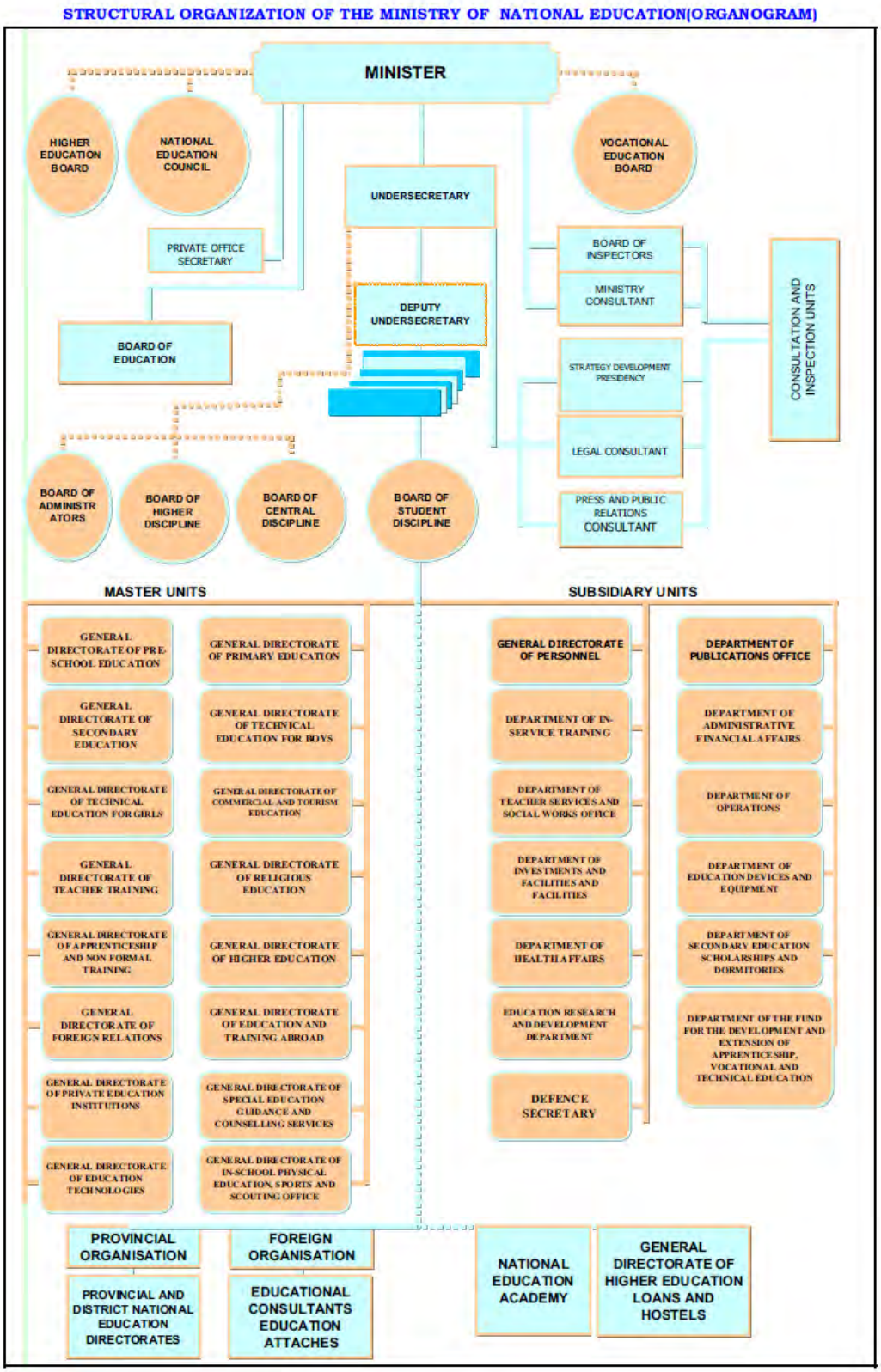
Figure 2: Education System in Turkey



[2] GDTVE is also called as the General Directorate of Technical Education for Boys.

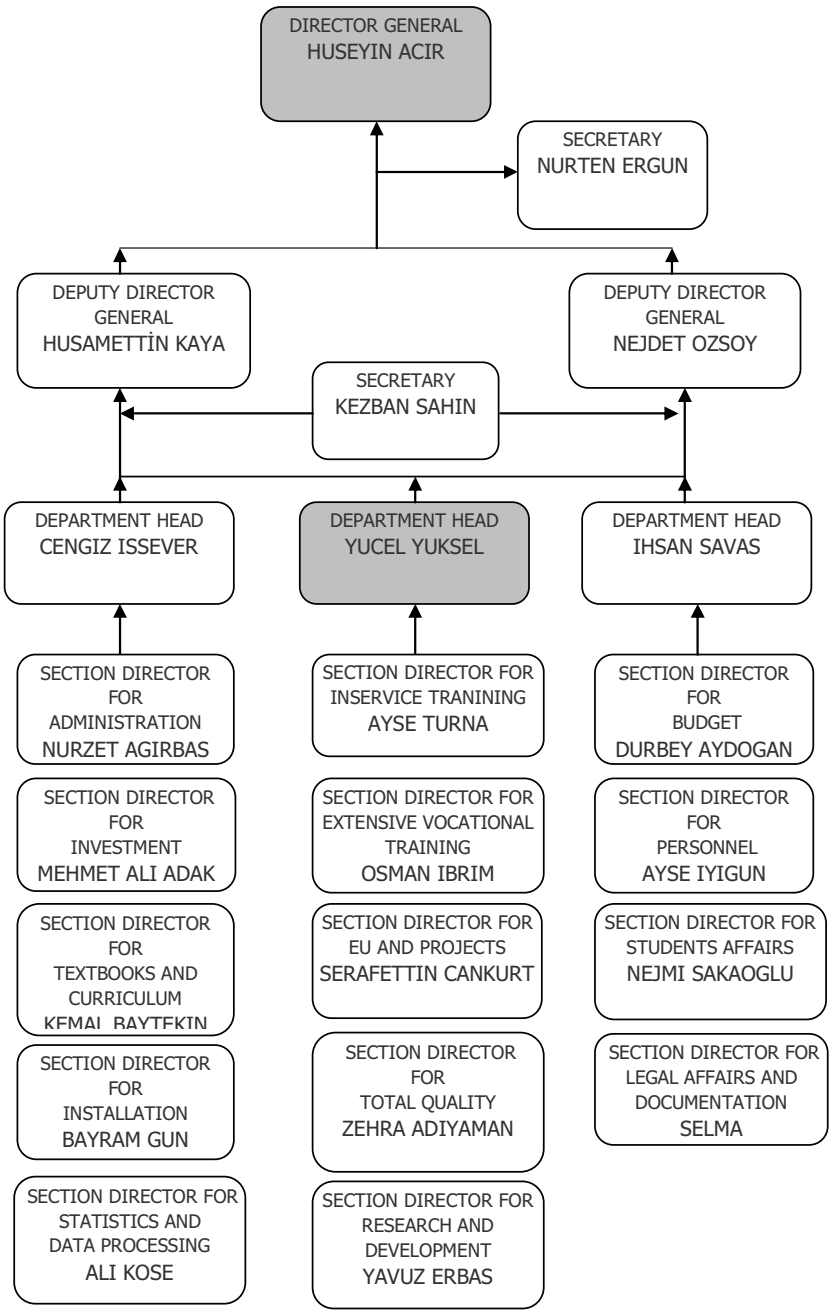
[3] Total number of ATL was 157, and AML was 134 in 1998/99 academic year.

Figure 3: Organization Chart of the MoNE



Source: MoNE, 2006

Figure 4: Organization Chart of the GDTVE



2-2-2 Training for In-service Teachers

(1) Career Path and Training Program for Teachers

Maximum length on service of teachers under the GDTVE is regulated as 25 years about male teachers and 20 years about woman teachers. Teachers can be generally promoted twice until retirement age; ordinary teacher for the first five years from the appointment, expert teacher for the next 14 years, and major teacher for the last 6 years. All the promotions are based on the examinations. For promotion to school principal,

candidate teachers also need to pass examinations. The GDTVE does not obligate them with training courses in a systemized way, excepting administration training courses for principals and deputy principals. The training courses fir principals and deputy principals are mainly about revisions of relevant laws and regulation.

(2) In-service Training for Teachers

In-service training courses are usually offered in every summer vacations. Department of In-service Training of the MoNE coordinates in-service teacher training courses. The courses are planned by the general directorates in the Ministry in terms of field, term and subjects for training. The general directorates receive requests from teachers and also occasionally consult with industrial sectors about factory visits to plan teacher training course. Websites maintained by each general directorate, and teachers check the website and apply for the training course. In cases that applicants exceeds the limits, courses of the same subject are held. Participants completed the training course are given a certificate by the Department of In-service Training. For training courses of the IAT department, teachers of the 20 expansion schools can only apply.

For conducting the general in-service training courses, 8 high schools are usually utilized as training facilities, since these schools possess workshop rooms for practices and accommodation. Though the government operates other facilities for general training, these can not be used because workshops are not built. The GDTVE has held 40 courses as in-service training in 2006 and 781 teachers attended the training in total. The Annex 3 shows training subjects and terms of the courses conducted in 2006. As shown in Annex 3, most of the courses were held for 5 days for training 15 to 20 participants mainly with subjects for PLC, CNC, CAD, basic computer language, and 3D model. In addition, the administration training courses were held 6 times and 275 participants attended. In 2007, 82 course for teachers and 7 courses for administrative staff for1831 persons in total are planned.

2-3 National Strategy for Developing Vocational Education and Training

The Medium-Term Program (2007 to 2009) aims at development of the human resources as one of the major targets. In the program, the human resources are planned to develop from various aspects, including increasing of employability, reducing of regional development disparities, the education sector development.

Basic policies for vocational education and training (VET) include (1) acceleration of transition to a modular and flexible VET system necessary for meeting the labor force required by the market, (2) strengthening of the cooperation between education and labor market, (3) support for training of human resources for information and communication technologies particularly for enabling employment of the unemployed young population by means of using distant and non-formal education opportunities.

For the purpose of correcting regional disparities, the program plans to implement labor training and entrepreneurship promotion, which take in account regional potentials and regional peculiarities of labor markets, and thus support particularly in less developed regions with the consideration of local characteristics.

Policies on development of the educational sector include 1) revision of curriculum to improve the quality of the primary and secondary education, 2) within this context implementation of the training of teachers and administrators, 3) diversification in terms of programs rather than of schools in the secondary education, and 4) extensive and effective use of information technologies in education.

2-4 Prior and On-going Projects / Assistance

2-4-1 Strengthening the Vocational Education and Training System in Turkey (MEGEP)

（1）Restructuring of Departments and Modularizing of Vocational Education and Training

Assisted by EU, the MoNE has implemented a five-year Project for "Strengthening the Vocational Education and Training System in Turkey" (MEGEP) since September 2002. Among several reforms of the VET system by MEGEP, restructuring of departments in vocational high schools, modularizing of VET and development of framework curriculum for new departments are conducted. The process for modularization and development of the framework curriculum is summarized as shown in Figure 5. For each new department, task teams were organized by teachers from pilot schools for MEGEP, experts from EU and professors in universities, and they engage in developing of modules and the framework curriculum. Officials of the MoNE also participated in the task teams.

Based on "International Standard of Classification of Occupations (ISCO88)", every occupation in the manufacturing, service and transport industries were classified into 196 categories. According to this occupational classification, VET in the secondary level has been restructured from the previous 98 departments (*bölüm*) to the present 42 departments (*alan* or field). A new department was classified based on International Standard Classification of Education (ISCED97).

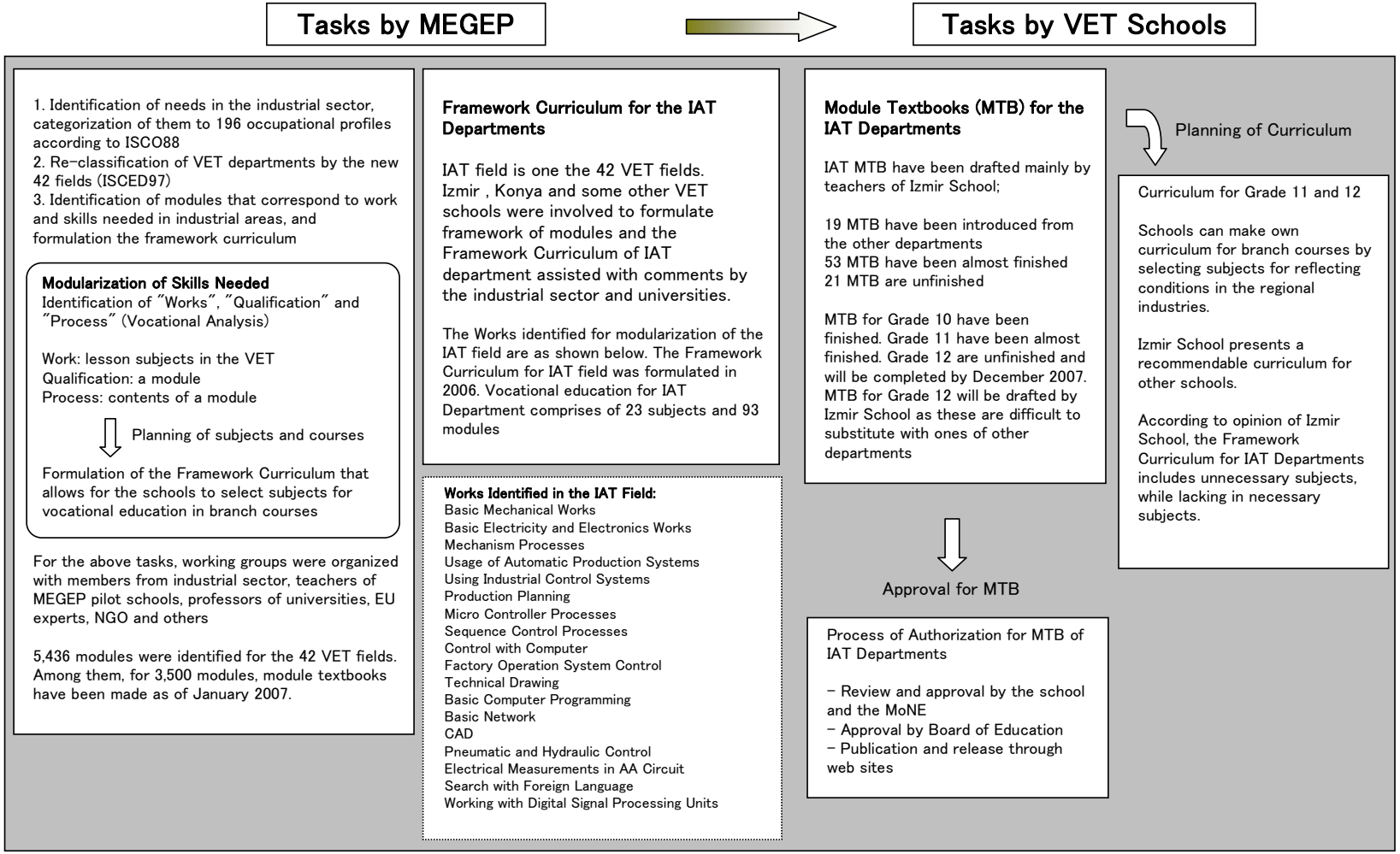


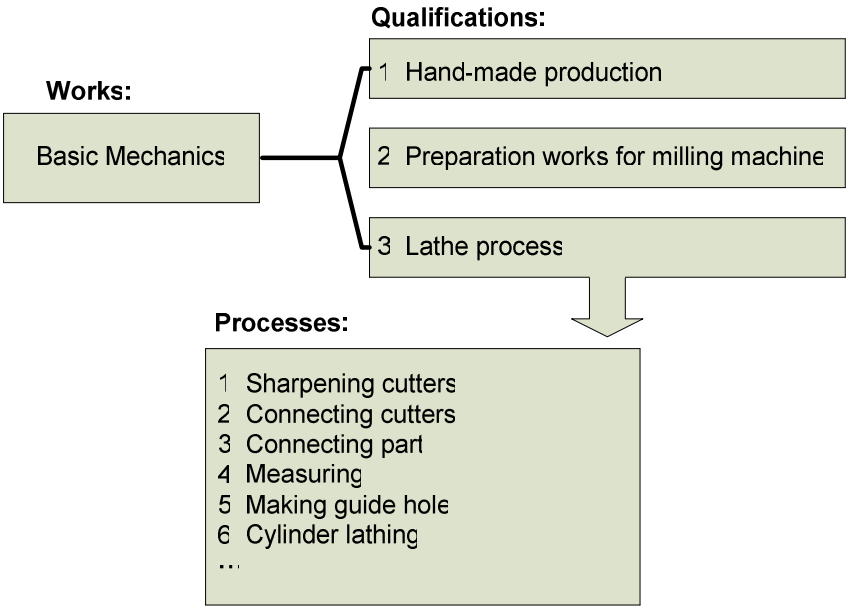
Figure 5: The process of formulation of curriculum under MEGEP

For developing framework for modules, technical aspects corresponding to occupations, together with skills or competencies that are necessary for occupation, were analyzed. This process is called "Vocational Analysis", which includes analyze of work, qualification and process. "Work" corresponds to a subject in lessons of the VET, "qualification" corresponds to a module, (a group of modules comprises a subject), and "process" corresponds to details of skills that comprise a module.

Basic Mechanics, one of the subjects for lessons of VET, is taken as an example. In an initial stage of the vocational analysis process, Basic Mechanics was divided into three modules of hand-made production, preparation for milling machine and lathe process. Among them, the lathe process was further divided into sharpening cutters, connecting cutters and parts, and others that follow. The following diagram illustrates the vocational analysis of Basic Mechanics.

A module is generally comprised of a sort of units of technical skills, therefore, lessen that does not accompany with practices is generally difficult to modularize.

Figure 6: An Example of Vocational Analysis



Following the vocational analysis, module textbooks that correspond to textbooks in the previous education system have been prepared by teachers of the VET schools who were selected through public recruitment[4]. As of January 2007, 5,436 modules in total are planned to be prepared for the 42 departments. Among them,

[4] Many teachers applied for this short-term recruitment. Public recruitment for "module writers" was undertaken since the MoNE had to prepare all the modules for the 42 new departments in VET schools. Drafting of modules for the IAT Department has been entrusted mainly to teachers in İzmir and Konya School for making use of their experience in the precedent project (JICA, 2002-2006).

around 3,500 modules have been already completed. Some of the completed modules have been released at website of MEGEP and published.

42 new departments include the IAT Department (Code No. 523). Before the reform of VET system, the IAT department in İzmir and Konya School had offered two branch courses of “Information Machinery” and “Information Electronics”. Accompanied with restructuring of the departments and introduction of the module-based framework curriculum, new IAT department is composed of the branches of “Mechatronics” and “Industrial Control”. These 2 branches have respectively around 30 students in the maximum, and IAT department has approximately 60 students in total. 2 different framework curriculums are prepared for Anatolia technical high school (ATL) and Anatolia vocational high school (AML). As of January 2007, the IAT department has been established in 26 VET schools. Most of them are AML.

(2) Revision of Educational System

New education system reformed by MEGEP has been implemented since 2005/2006 academic year; that is to say, since September 2005. Previous ATL’s 5 year course has been shortened to 4 year course by dissolving a preparatory course for lessons for foreign language. AML’s 4 year course has been kept, but a preparatory course in the first year was likewise dissolved. Credits for both common and vocational subjects have been changed. These resulted together in enlarging a difference of total credit hours for vocational subjects between ATL and AML, even between departments of the same name. For example, in case of IAT Department, 14 credits are offered for vocational subjects per week for 11 Grade and 17 hours for 12 Grade in ATL, while 27 hours for 11 Grade and 30 hours for 12 Grade are offered in AML. It means that, in these departments, AML have 13 hours more than those in ATL per week for vocational education.

2-4-2 Assistance by International Donors in the field of VET

Modernization of Vocational Education and Training in Turkey Project (MVET) has been implemented by assistance from EU. The MVET aims mainly at teacher training and terminates on September 2007. In addition, EU plans another Project for the educational sector, aiming at the adult education.

The World Bank has extended to the Turkish Government a financial assistance for the Secondary Education Project from 2005 to 2010 with a total loan amount of 104 million USD. The Project supports lifelong learning as a main objective and improves quality and equity of the general and vocational education of the secondary level. The Project is comprised of various components that include revision and implementation of the new curriculum programs for providing students with core skills necessary for the knowledge economy and lifelong learning, provision of training for information and communication technologies, implementation of career guidance and counseling, development of student assessment and evaluation.

3. Situations and Challenges in Raising of Labor Demands of the Industrial Sector

3-1 Present Situations of Labor Demands of the Industrial Sector

3-1-1 Labor Demands of Industrial Automation Technologies

Among one of recent studies on the labor demands in the manufacturing sector in Turkey, "Qualified Manpower Needs of MESS Members" was conducted by Turkish Metal Goods Manufacturers Syndicate[5] (MESS) in 2004. The survey was targeted at skill and education level of technicians employed by 119 member enterprises situated in 4 provinces in the central and western region of the country. By results of the survey, 77% of the surveyed enterprises answered that their technicians have insufficient skills and/or knowledge in NC/CNC works, CAD/CAM operation, electric-electronics, electronic materials, basic principles of machinery operation, mathematics, measuring devises and measuring, pneumatic and hydraulic, technical drawing and interpretation, and information on advanced technologies. Furthermore, the professions where lack of competency is observed were electric panel assembly, electrician works, electronics, technical drawing, mechatronics, NC/CNC operation, automatic control, assembly line operation, automobile maintenance and repair, plastic molding, and press operations.

"Labor Market and Skill Needs Survey 2005" was conducted in MEGEP, covering all the sectors and targeting at around 5,000 firms in 31 provinces. According to the survey, among the surveyed enterprises that had employed graduates from the VET high schools in the past 12 months, 43% of them indicated that the graduates are insufficient in skills for technical drawing. Likewise, 31% of them indicated they are insufficient in technical and professional skills, and 30% of them indicated low in skills of personal computer.

By results of a field survey conducted by the Small and Medium Industry Development Organization (KOSGEB) in Turkey on October 2005, it was estimated that labor demands of around 30,000 automatic control engineers and technicians would arise at 17 provinces in several years. It is expected that 1,200 students will graduate in the maximum every year from the IAT departments of 20 AMLs.

The industrial sector in Turkey has been developed in a remarkable rate in the past decade, and its contribution to the national economy will also be further increased. Based on results of the above studies on the labor demands, it is noted that enterprises are not satisfied with a level of skills of newly employed technicians. Especially in the manufacturing sector where the industrial automation technologies are to be introduced in years to come, labor demands of a technical competency are high.

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5 MESS: One of the major enterprises and trade organizations in Turkey. MESS is organized by around 300 member companies, employing 120,000 workers in total, in motor vehicle production, metal industry, machinery production, office and data processing equipment, electric equipment, radio, TV and communication equipment, medical and precision optical equipment, and furniture production.

3-1-2 Japanese Manufacturers in Turkey

According to a study[6] conducted by Japan External Trade Organization (JETRO) in end of 2005, around 50 Japanese firms maintain are located in Turkey. 16 firms among them are manufacturers; 3 firms are manufacturers of automobiles and 10 firms are machineries and assemble parts for automobiles. A majority of the Japanese manufacturers in Turkey is thus those in the automobile industry. Remaining 3 firms are of fields of processing food and agriculture or fisheries products and others. Because of a good geographical access to the European markets, many giant automobile enterprises from the United States, Europe and Japan extend business in Turkey. The study shows that among the above 16 Japanese firms, 5 or more firms deem that the trade and investment system and infrastructures give obstacles to operate business in the country, and 4 firms deem shortage of labor gives the obstacles.

3-2 Institutional Framework of VET

3-2-1 Program for Expanding Industrial Automation Technologies Departments

(1) Selection of Expansion Schools for Extending the IAT Department

The MoNE planned a program to extend the IAT department, which has been established in İzmir and Konya School with assistance of the precedent technical cooperation Project from Japan (2001 to 2006), to other 20 AML in Turkey. Target schools for extending the IAT department were selected from 20 provinces. These selected schools are called “expansion schools”. The main criteria of selection of the expansion schools were the industrial sector in the region, migration of the population and unemployment rate. In addition, expansion schools must have the adjacent department such as Machinery Technologies Department and Electric-Electronic Technologies Department. Name of the expansion schools are listed in Table 1, together with their province and accreditation date of the IAT department. Those that the department was accredited in 2004 total 11 schools. The departments of remaining 9 schools were accredited in 2006. In the first group of expansion schools, it was 2005/2006 academic year that the first students enrolled in the IAT departments. Similarly, in the second group of expansion, it was 2006/2007 academic year. The Project aims at supporting the above Program for Expanding IAT Departments.

6 Study on Business Status of Japanese Manufacturing Enterprises in Europe and Turkey, JETRO, September 2006

Table 1: Twenty Expansion Schools and Dates of Accreditation of IAT Departments

NO	Province	Name of School	Principal	Remark	Budget Allocation for Equip. (YTL)	Establishment approval date
1	ADANA	Merkez ATL-AML	Ramazan TEKE	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004
2	AFYON	Gazi ATL-AML	Erol AVCIOGLU	2006-2007 Went to Japan in 2nd group	150.000 2006	24.01.2006
3	ANKARA	İskitler ATL-AML	Ahmet OZDEMIR	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004
4	ANTALYA	Merkez ATL-AML	Hasan OZEN	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004
5	BURSA	Ali Osman Sönmez ATL-AML	Gurol ERISMIS	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
6	DENIZLI	Merkez Şehit Öğretmen Yusuf Batur ATL-AML	Kudret YEMISCIOGLU	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
7	ERZURUM	Atatürk ATL-AML	Fikret UMUDUM	2006-2007 Went to Japan in 2nd group	150.000 2006	24.01.2006
8	ESKISEHIR	Ataturk ATL-AML	S.Sirri KABADAYI	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	140.000 2005	14.07.2004
9	GAZİ ANTEP	M.Rustu Uzel ATL-AML	Abdulkadir KALYENCI	Started 2005-2006 Went to Japan in 2nd group Automation Lab. 2006	127.500 2004	14.07.2004
10	MERSIN	Tarsus-Merkez ATL-AML	Hasan GURBUZ	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	140.000 2005	14.07.2004
11	İSTANBUL	Pendik ATL-AML		Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004
12	KAHRAMAN MARAS	Merkez ATL-AML	Mustafa DAŞCI	2006-2007 Went to Japan in 2nd group	150.000 2006	24.01.2006
13	KAYSERI	Hurriyet ATL-AML	Durmuş PAYAS	2005-2006 başladı Went to Japan in 2nd group	127.500 2004	05.10.2004
14	KOCAELI	Gebze ATL-AML	Mehmet Ali TOKLUOĞLU	Started 2005-2006 Went to Japan in 2nd group Automation Lab. 2006	140.000 2005	14.07.2004
15	KONYA	Adil Karaagac Anadolu Teknik Lisesi	Muzaffer APAN	Started 2005-2006 Went to Japan in 3rd group Automation Lab. 2006	140.000 2005	14.07.2004
16	MALATYA	Yunus Emre ATL-AML	Huseyin KAYA	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
17	ORDU	Merkez ATL-AML	Omer BAŞ	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
18	SANLI URFA	Merkez ATL-AML	Abdulkadir ACAR	2006-2007 Went to Japan in 2nd group	150.000 2006	10.03.2006
19	TEKIRDAG	Çorlu-M.Rustu Uzel ATL-AML	Caner BAYSAL	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
20	VAN	Merkez ATL-AML	Veysel AKDAS	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004

Source: MoNE, February 2007

(2) Equipment for Expansion Schools

The MoNE has delivered most of the training equipment for the IAT departments in the first group. Main training equipment that had been delivered by January 2007 includes factory automation training system (FA) made in Germany, personal computers with LAN server, PLC training equipment. The major equipment was procured by the MoNE and delivered to the schools, while the minor equipment was procured at each school. The budget for a school to purchase the minor equipment was around 127,500YTL to 150,000YTL. Training equipment for the second group has not been prepared yet as of January 2007, as the equipment will not be necessary until 2008/2009 academic year when the first students of the IAT department in the second group advances to Grade 11. Most of workshop practices using the equipment start in Grade 11.

(3) Training for Teachers in the IAT Departments of the Expansion Schools

The MoNE has recruited or transferred teachers for IAT department at the expansion schools. Full number of teachers for the department is planned around 15 persons, and hence approximately in total 300 teachers are to be assigned for the departments of the 20 expansion schools. As shown in the table below, training of IAT education of the first group has been conducted at the TTC of İzmir School and other institutions 3 times by January 2007. The first training for candidate teachers from the second group is scheduled to be conducted at the TTC from 19 February to 1 June 2007 (103 days).

Table 2 Training Courses for Candidate Teachers from the IAT Departments (January 2007)

Durations	March to April 2006	Sept. to Dec. 2006	Sept. to Dec. 2006
Contents	Subjects for Grade 10	For Grade 10 and 11	FA system (provisional)
1st Group	31 persons	33 persons	20 persons
2nd Group	Not implemented yet	Not implemented yet	Not implemented yet

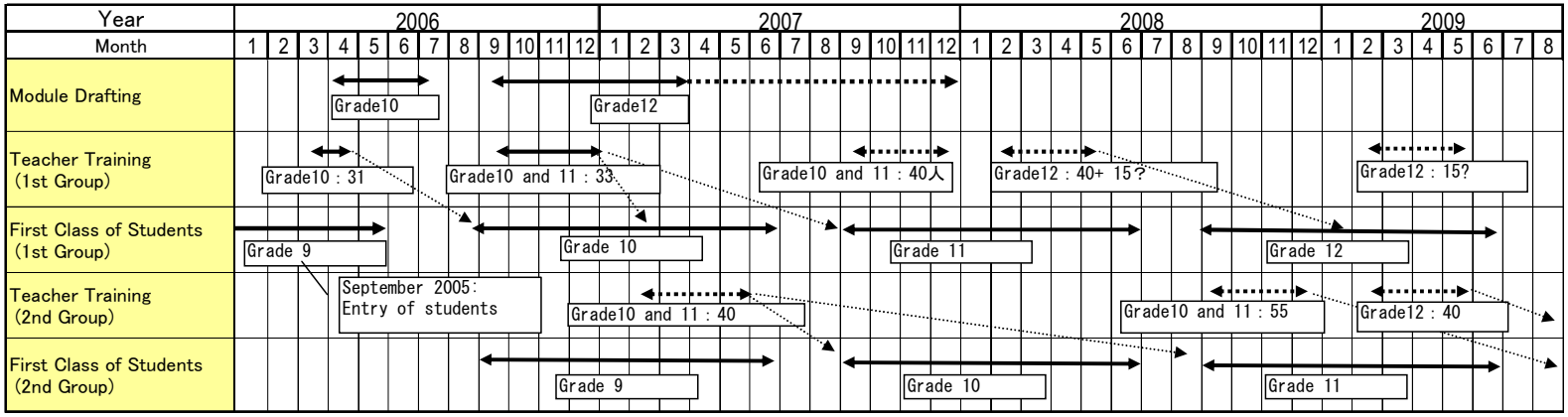
3 candidates per 1 school are selected from related fields of electric-electronics, machinery and computer. Training courses are planned and implemented as following steps, 1) decision of subjects for training, 2) decision of numbers of participants, 3) selection of participants by the expansion schools. At the end of the training courses examination is conducted, and candidates who passed the examination are formally assigned to the IAT departments.

The training course for Grade 10 is held from March to April 2006, which is composed of lectures and practices on 5 subjects including Basic of Micro Controller. The training course is held from September to December 2006, which covers subjects for Grade 10 and 11, as length of training was allowed as 3 months. All the participants attended the same training, irrelevantly to their expertise. As a result, participants were not satisfied with the training as the content of training overlaps their expertise. Reflecting on the

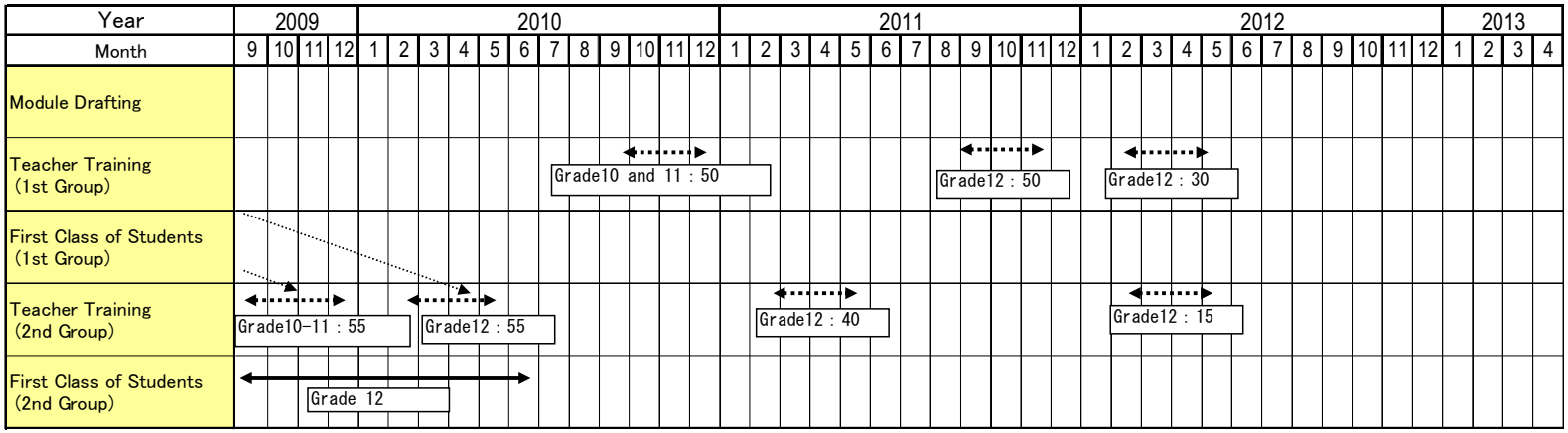
assessment, the training is modified on February 2007. The course for subjects of Grade 10 and 11 will have 20 participants from electric-electronics field and other 20 participants from machinery and computer fields. It is planned that the former group attends training mainly for subjects of the Industrial Control Branch, and that the latter group attends training mainly for subjects of the Mechatronics Branch.

Teacher training for Grade 12 is planned to be started on autumn 2007. According to current mid-term teacher training plan, All 300 teachers will complete the training on 2012. Schedules of each teacher training courses is being carefully reviewed by the MoNE, as it is necessary to finish training for subjects of a grade before the first students goes up to the grade. Figure 7 shows the overall schedule for the on-going teacher training plan. In addition, the second training for the FA training system is planned in April 2007.

Figure 7: Training Program for Teachers from Expansion Schools, 2006 to 2011



Accumulated number of participants from 1st Group: 174
Accumulated number of participants from 2nd Group: 135



Accumulated number of participants from 1st Group: 130
Accumulated number of participants from 2nd Group: 165

3-2-2 Target Schools for Extending the IAT Department

(1) Outline of the 20 Expansion Schools

Numbers of the students classified with departments and schools (*lisesi*), together with number of teachers classified with expertise, are shown in Annex 4. Scales of the expansion schools are largely different in a range from those having 3,000 or more students to those having around 500 students. Though 15 teachers are planned as a full number for the department, in some school, 23 teachers are planned to recruit. Even in the first group of the expansion schools, number of teachers that have been recruited is still 6 to 8 persons as of January 2007, leaving almost a half of the full number vacant. As a result, assignment of the lesson subjects to teachers is not done yet.

Questionnaire survey was conducted to the first group schools, in which teachers have already attended training at the TTC (Annex 5). Most participants are not fully satisfied with the training for both Grade 10 and 11, because training materials, lectures, a length of training term and others are deemed not fully sufficient. Some teachers answered that training for their expertise was not necessary.

With regard to 20 subjects in the IAT departments, survey was undertaken by self-assessment of all the teachers from the first group schools who had participated in training at the TTC. This survey aims at seeing whether teachers have enough technical knowledge / skills and are able to prepare teaching materials. The maximum point for the assessment was set at 3 and the minimum at 0. Answers to the questionnaire used for the survey from 56 teachers are summarized in Annex 5. The results show that, for more than a half of the subjects, an average of the self-assessment by all 56 teachers was less than 1.5 points. This seems to be resulted mainly because the training for subjects of Grade 12 is not implemented yet and the average was calculated irrelevantly to field of expertise of the teachers. Among 3 expertise fields stated above, “electrics - electronics” is further divided into “electrics” and “electronics and telecommunications”. For 4 fields adding machinery and computer to these two, the average was calculated as well. The results show some differences exist by these 4 fields of expertise (see radar charts attached in end of Annex 6). Teachers of the machinery field answered that they are hard to deal with the subjects related to the electrics-electronics and computer field. The teachers of the computer field assess that they are hard to deal with the subjects related to machinery and electrics-electronics.

(2) Management of the Expansion Schools

There exist 1,580 VET schools that are administered by the GDTVE of MoNE. The 20 expansion schools are a part of these schools. The expansion schools are administered in the same way as the other schools in terms of personnel management for administration staff and teachers, and the operation budgets for them are also managed as a part of those for all the schools. The training courses for the teachers are deemed as particular measure. Recruitment of teachers and delivery of the training equipment in the IAT departments are in progress. The budget allocation for the expansion schools has been prioritized.

Based on the site survey on some of the second group schools, training facilities and equipment in the schools appear to have been used for a long time. It seems to be rare that the major equipment was renewed in most VET schools. It is considered that the new IAT departments are paid particular attention and high expectation by the local industry firms as well as by teachers of the expansion schools is recognized.

3-2-3 Curriculum and Modules for the IAT Department

(1) Framework Curriculum

For drafting the framework curriculum and the modules of the new IAT department, teachers from the MEGEP pilot schools in Bursa, İstanbul (Tuzla), İzmir, Kocaeli, Konya and Ankara (Iskitler) had organized a task team. Comments from the universities and industrial sector were received. Based on the previous curriculums developed by the precedent Project assisted by JICA, the new curriculums and module textbooks have been planned mainly by the Project counterparts of İzmir School at the precedent Project.

The framework curriculum defines lesson subjects of the grades and necessary credit hours. The framework curriculum for the IAT departments in AML is comprised of 22 subjects for the common education in Grade 9 and 10, and 23 subjects for the vocational education in Grade 11 and 12. 40 credit hours per week are allocated equally to each of the grades (see Table 3). While all the subjects and necessary credits are specified for the common education, only a standard set of subjects and a total hour of credits are defined for the vocational education. The selection of subjects for vocational education and allocation of credits is left for decision by the schools with reflecting needs of the regional industry.

Table 3: Framework Curriculum for IAT Departments in AML

ANATOLIAN VOCATIONAL HIGH SCHOOLS
INDUSTRIAL AUTOMATION TECHNOLOGIES
(MECHATRONICS AND INDUSTRIAL CONTROL)
WEEKLY COURSE CHART OF FRAME TRAINING PROGRAMME

COURSE CATEGORIES		COURSES	IX. GRADE	X. GRADE	XI. GRADE	XII. GRADE
COMMON COURSES		*LANGUAGE AND NARRATION	2	2	2	2
		TURKISH LITERATURE	3	3	-	-
		RELIGIOUS CULTURE AND ETHICS	1	1	1	1
		HISTORY	2	2	-	-
		TURKISH REPUBLIC HISTORY & KEMALISM	-	-	2	-
		GEOGRAPHY	2	2	-	-
		MATHEMATICS	4	-		
		PHYSICS	2	-		
		CHEMISTRY	2	-		
		BIOLOGY	2	-		
		HEALTH	2	-	-	-
		PHILOSOPHY	-	-	2	-
		FOREIGN LANGUAGE	10	4	4	4
		PHYSICAL TRAINING	2	-	-	-
		NATIONAL SECURITY	-	1	-	-
		TRAFFIC & FIRST AID	-	-	1	-
		TOTAL	**34**	**15**	**12**	**7**
FIELD/BRANCH COURSES	COMMON COURSES OF THE FIELD	INFORMATION AND COMMUNICATION TECH.	2			
		MATHEMATICS		3		
		VOCATIONAL DEVELOPMENT		2		
		BASIC MECHANICS		5		
		*BASIC INDUSTRIAL APPLICATIONS		9		
		TECHNICAL AND VOCATIONAL DRAFT		2		
	BRANCH COURSES	*SKILL TRAINING AT FIRMS	-	-	27	30
		MECHANISMS				
		BASIC COMPUTER NETWORKS				
		MODELLING ON COMPUTERS				
		PNEUMATIC AND HYDRAULICSYSTEMS				
		*COMPUTERIZED CONTROL				
		*SUCCESSIVE CONTROL				
		*PLANT AUTOMATION				
		AUTOMATIC PRODUCTION				
		SCADA SYSTEMS				
		TECHNICAL FOREIGN LANGUAGE				
		CIRCUIT ANALYSIS				
		INDUSTRIAL MANAGEMENT				
		BASIC PROGRAMMING				
		BASIC COMPUTER NETWORKS & SERVER SERVICES				
		COMPUTERIZED CIRCUIT DESIGNS				
		SENSORS & SIGNAL RECORDING				
		*MICRODETECTOR APPLICATIONS				
		INTERNET PROGRAMMING AND SECURITY				
		INDUSTRIAL SYSTEMS				
		INSPECTION SYSTEMS				
		NUMERICAL SIGNALLING SYSTEM				
TOTAL FIELD/ BRANCH COURSES			**2**	**21**	**27**	**30**
OPTIONAL COURSES			**3**	**3**	**-**	**2**
GUIDANCE			**1**	**1**	**1**	**1**
TOTAL			**40**	**40**	**40**	**40**

(*) refers to the courses which are not applicable to the annual average success grade in accordance with the Article 33. of the Class Achievement Regulation for Secondary Schools, Ministry of National Education.

In İzmir School, the selection of subjects for Grade 11 and 12 by two branches have been finalized (see Annex 8). The Mechatronics Branch includes mainly the lessons for use of PLC, measures for control of various devices and systems (among them, FA training system is focused), control by use of micro computers, and CAM process. The Industrial Control Branch includes lessons for use of PLC, measures for control of various devices and systems, control by use of micro computers, development of technology application, and installation of computer networks. Though this curriculum has been prepared for İzmir School, it is being recommended for use of the expansion schools as well. Teachers in Iskitler School in Ankara Province are reviewing the lesson subjects and modules for their selection to reflect comments from the industrial sector in the province. For a time, it is told that Iskitler School will use the curriculum prepared by İzmir School without modification.

(2) Framework of Modules

According to the framework curriculum for the IAT departments, 28 subjects given to Grade 10, 11 and 12 are to be comprised of 93 modules in total. This means a subject is to be built with 3 modules in average, while some subject of a wider technical range has 14 modules.

In the VET schools in Turkey, it seems that vocational training constitutes a main part of the lessons. Most part of the module textbooks are given to guidance for use of devices and machineries, especially in the modules for Grade 11 and 12. Therefore it is considered that technical methods for machinery or system operation constitute a main concept of the lessons, which is supported with practices by means of applying the training equipment.

(3) Development of Module Textbooks

As a result of the reform of the education system, the framework curriculum was modified and the modular system has been newly introduced. Because of the reform, the textbooks developed at the precedent Project (2001 to 2006) are not used for the new IAT departments. For developing the module textbooks for the IAT departments, the previous textbooks were referred occasionally. As of January 2007, among 93 module textbooks that are used in Grade 10 and upper, 53 modules have been finalized, although these are in various stages such as drafts under peer review, drafts under review by the MoNE, and drafts approved by the Board of Education. All the modules for Grade 12 are being drafted still, and scheduled to be submitted to the MoNE by December 2007.

As type of the training equipment is different between İzmir School and the expansion schools, some module textbooks will have two versions. To determine technical contents of lectures and practices for drafting module textbooks for Grade 12, it would need assistance by Japanese experts to obtain technical knowledge / skills and teaching materials. Teacher training for Grade 12 is scheduled in April 2008 for the first group, and the lessons for Grade 12 will start in September 2008. The module textbooks are required to

complete by December 2007.

Module textbooks for the IAT departments have been drafted mainly by 15 teachers of İzmir School. As shown in the table below, around 30% has been prepared in collaboration with other AML. Some module textbooks were drafted by teachers of Konya and Iskitler School, and some that were prepared in the adjacent departments were determined to introduce to the IAT department.

Table 4: Preparation of the IAT Module Textbooks (January 2007)

Grades	İzmir School	Konya School	Iskitler School	Adjacent Departments	Total
10th and 11th	45	7	1	19	72
12th	15	6			21
Total	60	13	1	19	93

Module guides for teachers have not been prepared. Training materials for the teacher training at the TTC have not also been prepared, and module textbooks have been used as substitute of teacher training textbook so far. It is recognized that the training materials is necessary to be prepared. At present, teachers of İzmir School are focusing on drafting of the module textbooks, and the training materials will be prepared when enough time is allowed for them to take.

3-3 Present Condition and Problems of the TTC to be Addressed

3-3-1 Present Condition of the TTC

(1) Organization of the TTC

The TTC aims mainly at teacher training for VET in the IAT. In addition, the TTC has also purposes to hold seminars on the updated IAT for teachers of adjacent fields. The TTC is positioned as a part of İzmir School, and it is exclusively used for teacher training in the IAT field and not used for other purposes including general training for in-service teachers. This excusive use of the TTC is justified by a document in the Ministry dated 22 January 2007 (Annex 10). Since it is a part of İzmir School, the TTC is not given a status as an independent institution, and one of the deputy principals of İzmir School will manage the IAT department. At present the 16 counterparts of the precedent Project are assigned to lecturers at the TTC. They serve concurrently as teachers for the IAT Departments of İzmir School, and most of them are also in charge of writing module textbooks of the IAT departments. The MoNE stated that the teachers continue to serve for several duties as above. Table 5 summarizes mandates of the MoNE, İzmir School and the expansion schools in relation to extending IAT department.

Table 5: Management of the TTC and Involvement of Relevant Institutions

Functions	MoNE	Izmir School and TTC	Expansion Schools
Personnel management of teachers	• Decision on numbers of teachers, based on number of students • Appointment of teachers and assignment of them to schools	• Efforts are paid for enrollment of students filling a full number • TTC: Lecturers are organized by teachers in Izmir School, though a few lecturers are occasionally invited from outside.	• Efforts are paid for enrollment of students filling a full number
Current budgets of operation and maintenance on facilities	• Review of budgets requested by schools • Decision of amounts of budgets to be allocated	• Request for budget for light and heating, and maintenance costs • TTC: As a part of Izmir School, necessary budgets for operation and maintenance are secured	• Request for budget for light and heating, and maintenance costs
Development budget for construction and purchase	• Planning and implementation of construction on necessary building, accompanied with accreditation of departments	• Request for training equipment necessary for TTC	• Receiving the delivered equipment. (Specifications for equipment have been planned and reviewed by MoNE)
Current budgets for training programs	• Allocation of budgets for planned training programs	• Implementation of the training courses allowed by the budgets	• Recommendation of teachers who should attend training courses notified
Planning and implementation of training for in-service teachers	• Asking teachers for training subjects, planning of training contents and numbers of participants in a year	• Participating in training in same conditions as the ordinary VET schools. • General training for in-service teachers has not been done at TTC so far.	• Participating in training in same conditions as the ordinary VET schools
Planning of training programs for teachers of IAT departments	• Securing TTC and necessary budgets for training of teachers of the IAT departments	• Planning of timing and term on training courses within limit of number of days secured by budget	
Planning of training courses for training for IAT departments	• Leaving these to decision by Izmir School	• Planning of training courses that meet the Framework Curriculum	• Participants assess the training courses
Review and revision of curriculum for IAT departments	• Leaving these to decision of Izmir School, subject to approval and/or accreditation by Board of Education of the Ministry	• Prepared the Framework Curriculum in collaboration with resource schools. • Preparing the curriculum for Grade 11 and 12. • Drafting module textbooks	• Some schools such as Konya have been involved in formulation of the Framework Curriculum and modules textbooks.

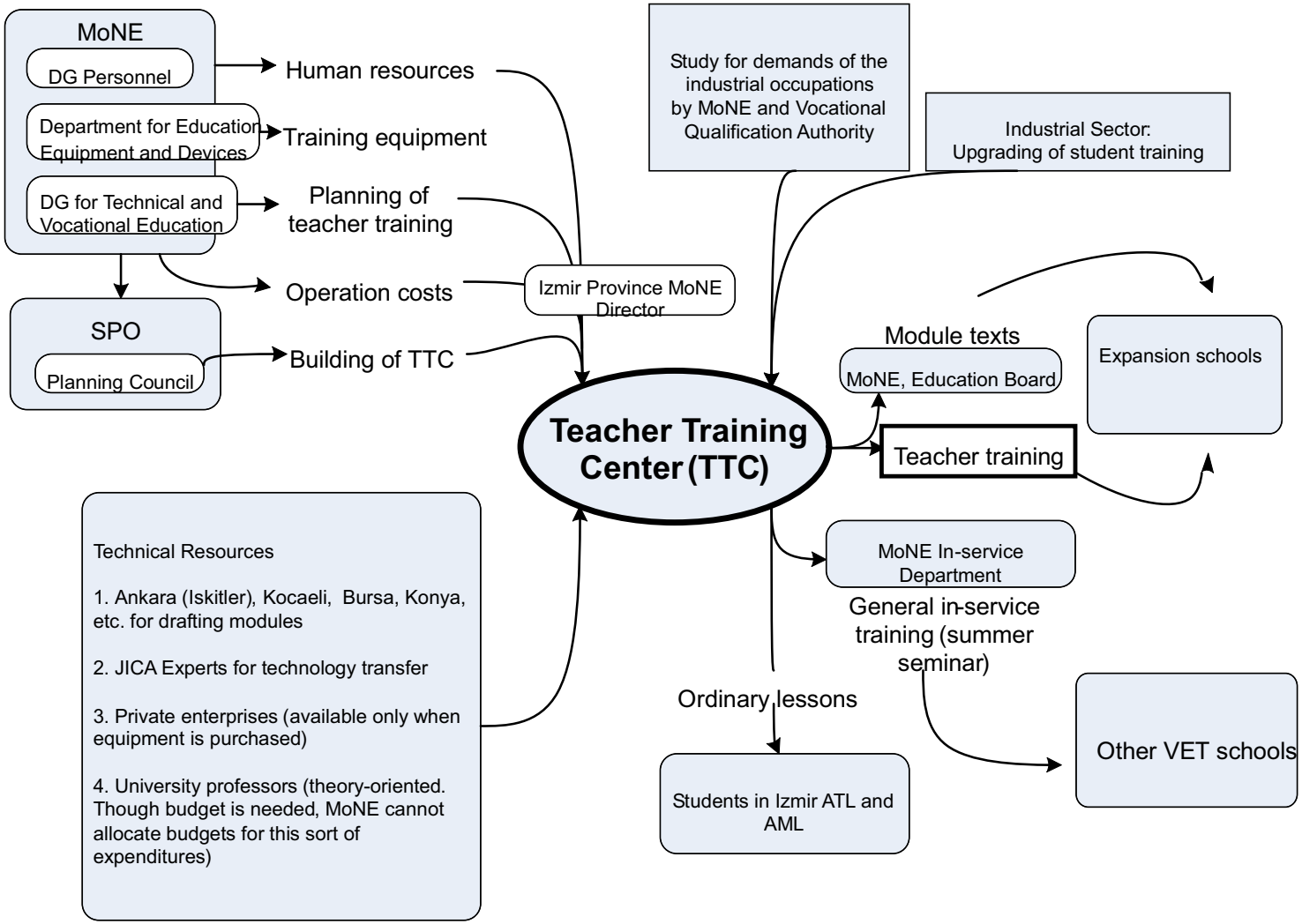
(2) Construction of the TTC Building

Building for the TTC was built in 2006 in a total cost of 1,850,000YTL. The total floor space is of around 4,800 square meters. Main facilities include seminar rooms, workshops (practice rooms), and accommodation for 60 persons. Personal computers and LAN server have been delivered to the building, as well as fixtures and fittings for the accommodation facilities. As of January 2007, the other training equipment for installation in the workshops is being requested to the MoNE.

(3) Management of the TTC

For planning and implementing the teacher training program, İzmir School and the TTC has various relations with the other institutions. The MoNE determines assignment of teachers, scope and amount of budgets. The other AML such as Konya and Iskitler School provide technical support on development of module textbook. The relations among relevant institutions were shown in Figure 8

Figure 8: The TTC and related institutions



Operation budget for the TTC was 266,800US$ in 2006 fiscal year. The budget was allocated mostly for the equipment and facilities. Personal expenses for the teachers of the IAT Department of İzmir School are covered by the budget for the school. Main budgets for operating the TTC are hence comprised of maintenance costs for building and facilities, fuel and light expenses and labor costs for workers. For the whole buildings and facilities of İzmir School, 47,500 YTL for electricity, 4,800 YTL for water, 29,700 YTL for fuel oil and others were expensed in 2006 fiscal year. For the budget in 2007 fiscal year, 90,000 YTL for electricity, 8,000 YTL for water, 70,000 YTL for heating are being requested to the Ministry. Among these budgets, those necessary for the TTC building are included. The training costs that cover travel and food expenses for participants have been budgeted directly by the MoNE.

3-3-2 Problems Addressed of the TTC

Based on opinions and observations by 16 teachers of the IAT Department of İzmir School, stakeholder analysis and problem analysis were conducted. Results were summarized in the problem trees in Annex 12.

As shown in the problem trees, since it was just a year ago when the first training was conducted at the TTC of İzmir School, there seems to be still various problems in training materials and institutional management. The problems are summarized as follows;

- Shortage or lack of training equipment (at present, equipment for students is used)
- Overlapping of training for teachers and lesson for students due to the concurrent assignment of lecturers
- Compatibility of training equipment such as circuit board between İzmir School and the expansion schools
- Management of training courses
- Assessment and evaluation on the training courses
- Delay in drafting of module textbooks for Grade 12
- Preparation for materials for teacher training

4. Project Strategy

4-1 Outlined Strategy

4-1-1 Selection of Approaches

The Project is aimed at establishing the effective teacher training system for the IAT at the TTC of İzmir Mazhar Zorlu School for the purpose of extending the IAT department, and thus to meet the labor demands of the industrial sector in Turkey. For achieving this objective, planning, implementation, evaluation of the teacher training programs of the TTC, and enhancement of planning capacity of the TTC are selected as project approach.

4-1-2 Project Site

The activities of the Project are deployed mainly at Teacher Training Center of İzmir School. The building, mechanical and electric facilities of the TTC have been mostly prepared in 2006.

4-2 Project Implementation Structure

4-2-1 Implementation Agencies

The Director General of GDTVE will take an overall responsibility for the Project. Among three departments of the GDTVE, the Head of a department that is in charge of in-service teacher training in the GDTVE will take a responsibility for management of the Project. The Principal of İzmir School will take an administrative and technical responsibility for the implementation of the Project. At present, the TTC is a part of İzmir School, and not given an independent institutional system.

Joint Coordinating Committee (JCC) will be organized for coordination and discussion by the project implementation agencies. The JCC will be established by representatives from the MoNE, State Planning Organization (SPO), Japanese Embassy, JICA Turkey Office, the Principal of İzmir School, and Deputy Principal.

4-2-2 Assignment of Project Counterparts

Officer(s) for management of the Project assigned by the Turkish Government and lecturers of the TTC will work as the project counterparts.

5. Project Design

5-1 Overall Goal

5-1-1 Super Goal

Narrative summary	Technicians of industrial automation technologies (IAT) are raised and needs of the industrial sector in Turkey for them are substantially satisfied.
OVI	Numbers of graduates from IAT Departments employed by relevant factories reach to XX persons per year.

5-1-2 Overall Goal

Narrative summary	Vocational education and training (VET) for IAT at the expansion schools is practiced effectively.
OVI	XX students will graduate from IAT Departments.

5-2 Project Purpose

Narrative summary	Teacher training system of the TTC is established.
OVI	Indicators for training courses • More than XX% of participants from the expansion schools assess their training courses at the TTC are practically usable for their lectures and practices for IAT • XX% of the participants finish the training course • Average score of the exit examinations Indicators for institution of the TTC • Management procedures for teacher training courses are prepared • Planned number and implementation number of training courses Indicators for long term strategy • The long term strategy for the TTC receives a due consideration from Ministry of National Education

5-3 Outputs and Activities

Four outputs are planned in the Project. These are planning, implementation, evaluation, and preparation of a long term strategy of the TTC. All these are related to training program of the TTC.

Output 1	Teacher training program of the TTC is planned.
OVI	• Number of designed teacher training courses • Number of teacher training textbooks

Activity 1-1 Baseline survey of IAT department of expansion schools is conducted.

Activity 1-2 Organizational structure of the TTC is arranged.

Activity 1-3 Mid-term training plan (2006-2011) is reviewed.

Activity 1-4 Module textbook is drafted.

Activity 1-5 Teacher training courses are planned.

Activity 1-6 Teacher training textbook is drafted.

Output 2	Teacher training courses of the TTC are implemented.
OVI	Number of implemented teacher training courses

Activity 2-1 Equipment for the TTC is installed.

Activity 2-2 Orientation for participants is conducted.

Activity 2-3 Teacher training courses are implemented.

2-3-1 Teacher training courses for IAT Departments are implemented.

2-3-2 Teacher training courses for the adjacent departments[7] (summer seminars) are implemented.

Activity 2-4 Seminars on management of IAT Department are conducted for the expansion schools.

Output 3	Teacher training courses of the TTC are evaluated.
OVI	• Evaluation on teacher training courses is conducted XX times. • Monitoring is conducted XX times at all the expansion schools.

Activity 3-1 Standard of evaluation of teacher training courses and evaluation materials are drafted.

Activity 3-2 Teacher training courses are evaluated properly.

Activity 3-3 Monitoring on VET of IAT at the expansion schools is implemented.

Activity 3-4 The teacher training course and training textbook is reviewed.

Output 4	Planning capacity of the TTC is strengthened.
OVI	Long term strategy of the TTC is finalized.

Activity 4-1 Role of the TTC in the Long term strategy is identified.

Activity 4-2 Long term strategy of the TTC is drafted and submitted to GDTVE of the MoNE

5-4 Plan of Operation (PO)

The Project will have around three year implementation term. It is expected that on-going training courses by the present mid-term teacher training program for the expansion schools can be followed up six times in total. Similarly, relevant activities before and after the teacher training courses will be able to be undertaken six times in total. The overall draft Plan of Operation is attached in Annex 2.

5-5 Project Input

5-5-1 Input by the Turkish Side

The Project activities will be led by Turkish side. The lecturers as Project counterparts will be

[7] "Adjacent Departments" include Electricity-Electric Technology Department, Mechanical Technology Department and Information Technologies Department.

assigned at İzmir Mazhar Zorlu School, and the administrative personnel such as the deputy principal of the TTC and training coordinator will also be assigned at the school and the MoNE. Number of persons to be assigned will meet the necessity for implementation of the Project. When the necessity for increasing the number of teachers at İzmir Mazhar Zorulu School is recognized, the Principal of School will consider the additional assignment of teachers[8].

Office, office equipment, telephone with direct line and power supplies will be prepared in the TTC by Turkish side. The facilities and equipment necessary for training activities will be also supplied by Turkish side.

The project costs including expenses for the teacher training courses will be mainly born by the Turkish side.

5-5-2 Input by the Japanese Side

Japanese side assists the implementation of project activities led by Turkish side. The Project activities will be conducted based on the framework of curriculum of Industrial Automation Technologies admitted by the MoNE and equipment procured by Turkish side. The technical cooperation team comprised of short-term experts will be dispatched by Japanese side. (Number and field of expertise will be considered in accordance with the progress of Project.) The team will mainly assist in the aspect of teacher training.

Although the equipment at the TTC is procured by the Turkish side, if the necessity for implementation of the Project arises, the Japanese side can procure the supplemental equipment.

With regard to the project operation cost, the main cost will be born by Turkish side, if the necessity for performing the activities, the Japanese side will bear a part of the cost.

5-6 Important Assumptions and Pre-conditions

5-6-1 Important Assumptions

(1) Assumptions for Attaining the Outcomes

- Teachers of IAT Department in the expansion schools are appointed in time

(2) Assumptions for Attaining the Project Purpose

- A majority of the counterparts remain in the TTC

5-6-2 Pre-conditions

- Necessary budgets of the TTC are appropriately allocated.
- Appropriate number of the project counterparts is assigned.

[8] Please refer to the Annex 12 for the detail of terms of reference of Turkish side and Japanese side.

6. Ex-ante Evaluation

6-1 Relevance

Relevance of the Project is high because of the following points.

- The Medium Term Program (2007 - 2009) prioritizes improvement of the human resources. Improvement of human resources and increasing employability are main target of the program. The Project has goals that are highly relevant to these national priority strategies.
- As shown in the various labor market studies of the manufacturing sector, the labor force in the automation technologies field is insufficient in Turkey. The Project, aiming at teacher training for the IAT department, matches the demand of manufacturing industry.
- Human resource development for middle income countries is prioritized in JICA country program. The Project is included in JICA Cooperation program, called “Improvement of Vocational Education and Training Program”, which aim at improving VET for responding to labor demand of the industrial sector.

6-2 Effectiveness

Effectiveness of the Project is expected because of the following points.

- Output of Project includes not only planning, implementing and evaluating the training courses, but also strengthening of planning capacity for the TTC. Sufficient outputs are incorporated in the project plan for achieving the project purpose.
- The project purpose is “Teacher training system of the TTC is established”. Because The OVI include not only the indicators on the teacher training courses and institutional management of the TTC, but also finalizing long-term strategy of the TTC, the project purpose is clearly defined.

6-3 Efficiency

The Project is expected to be implemented efficiently because of the following points.

- Budget for construction of the TTC building and procurement of the training equipment for the TTC and IAT departments of the expansion schools is allocated by the Government of Turkey, as well as expenditures for implementation of the teacher training courses that include travel expenses of the training participants. Therefore Turkish side will provide necessary input for the Project.
- Since the counterparts to be assigned for the Project have received a series of training from the Japanese experts in the precedent Project, the total input from Japanese side will be more efficient.
- Important Assumptions for attaining the output, “Teachers of IAT Department in the expansion schools are appointed in time”, will be satisfied, because the MoNE assign necessary teachers to IAT departments.

6-4 Impact

The impact of the Project is expected as follows.

- The Project will conduct teacher training courses for approximately 300 teachers, however the seminar for adjacent departments will be held.
- In Turkey, economics in western part is developed. On the other hand, economics in eastern part is in the process of developing. Because the expansion schools are chosen in various regions of Turkey, the Project will contribute the correction of regional disparity.

6-5 Sustainability

Sustainability of the Project is expected to be high because of the following points.

- The MoNE's initiative to undertake the expansion program is strong as indicated in a fact that it has already started the teacher training.
- In the Project, as Japanese expert supports Turkish side in the respect of technical advice on module textbook writing, development of teacher training textbook, and center management, the ownership of Turkish side is respected.

6-6 Conclusions

This Project is to strengthen the on-going teacher training for the industrial automation technologies at the TTC that has been newly established in İzmir Mazhar Zorlu School with an objective to extend the Industrial Automation Technologies Department, which has been established in İzmir Mazhar Zorlu Anatolia Technical High School with assistance by Japan during 2001 to 2206, to other high schools in Turkey. The Project will meet one of prioritized issues in the national policies in aspect of supporting education and training of the labor demand of the industrial sector in the country. The Project will also expand outcomes of the precedent cooperation by Japan. Based on these, it is concluded that implementation of the Project is highly justifiable.

7. Monitoring and Evaluation

7-1 Notes for Managing the Project

(1) Contents of Teachers Training

The teacher training at the TTC seems to have been conducted mainly on lectures on module textbooks and use of the training equipment. It is necessary to study whether methods for teaching and methods for developing teaching materials based on the education science should be included in the teacher training. In addition, it is necessary to review whether a length of the current training term (3 months) is appropriate.

(2) Compatibility of Training Equipment

Training equipment supplied to İzmir School in the precedent Project was mainly from Japan, while the training equipment delivered to the expansion school is from the European countries and hence has technical specifications of European versions. It seems that teachers of İzmir School have not enough knowledge on the equipment of the expansion schools. By this reason, the TTC is planned to have the equipment of the same specifications as ones in the expansion schools.

(3) Long Term Strategy for the TTC

With regard to teacher training programs after 2012, though objectives of the TTC operations were identified as updating of technical skills of teachers involved in the IAT education, the details seems not to have been planned. Roles of the TTC for long term are also not identified, probably because the TTC is the first case of a teacher training center for a specific department of VET schools in the country. Review on roles of the TTC in long term should hence be undertaken in collaboration with the MoNE in course of this Project.

7-2 Monitoring Plan

The mid term evaluation will be conducted around February 2009, and consultation will be made on the project management. According to results of the mid term evaluation, after holding discussions, the project activities are revised if needed. By six months before the termination of the Project (around February 2010), the final evaluation is conducted. Main objectives of the final evaluation are to assess the achievement of the project purpose by the five evaluation criteria, to find measures to sustain the project benefits at post project stage, and to identify lessons for improvement of planning and implementation of other similar Projects.

Annexes

ANNEX 1 PROJECT DESIGN MATRIX

Version. No. 2.0
Date: 18 April 2007

Project Title: The Project on Strengthening the Program of Expanding Industrial Automation Technologies Department (SPREAD)
Duration: August 2007 to September 2010
Target Groups: Management staff, lecturers of Teachers Training Center (TTC) of Izmir Mazhar Zorlu Anatolian Vocational High School, teachers to be trained at the Indirect Target Groups: Teachers to be trained at the TTC

Narrative Summary	Objectively Verifiable Indicators[1]	Means of Verification	Important Assumptions
Super Goal Technicians of industrial automation technologies (IAT)are raised and needs of the industrial sector in Turkey for them are substantially satisfied	XX graduates of IAT departments are employed to the relevant factories every year.	Records of carrier guidance committee of schools with IAT Department	
Overall Goal Vocational education and training (VET) for IAT at the expansion schools is practiced effectively	XX students graduate from IAT Departments.	Records of carrier guidance committee of the expansion schools	Turkish industrial sector continue to develop in same growth rate as present
Project Purpose Teacher training system of the TTC is established.	<Indicator on teacher training course at the TTC> 1. XX% of participants assess training courses are practically usable for their lectures and practices for IAT. 2. XX % of participants complete teacher training course. 3. Average score of tests <Indicator on organization of the TTC> 4. Procedures on management of teacher training course are prepared. 5. Percentage of implemented teacher training courses compared with plan. <Indicator on long term strategy> 6. Long term strategy of the TTC receives a due consideration from Ministry of National Education.	1. Teacher training course assessment reports by TTC 2. Records for the teacher training courses of TTC 3. Records for the teacher training courses of TTC 4. Interview with the MoNE	Entry of students to IAT Department in the expansion schools is kept in the present level at least Number of expansion schools is not reduced.

[1] Numerical indicator will be specified at the first Joint Coordinating Committee based upon baseline survey.

Output 1. Teacher training program of the TTC is planned.	1-1. Number of designed teacher training courses 1-2. Number of designed teacher training textbooks	1. Records for the teacher training courses of TTC	Counterparts remain in TTC
2. Teacher training courses of the TTC are implemented.	2-1. Number of implemented teacher training courses	2. Records for the teacher training courses of TTC	
3. Teacher training courses of the TTC are evaluated.	3-1. Evaluation on teacher training courses is conducted XX times 3-2. Monitoring is conducted XX times at all the expansion schools	3. Records for monitoring	
4. Planning capacity of the TTC is strengthened.	4-1. Long term strategy for TTC is finalized.	4. Long term strategy plan by TTC	

Activities	**Inputs**	**Important Assumptions**
1-1 Baseline survey of IAT department of expansion schools is conducted. 1-2 Organizational structure of the TTC is arranged. 1-3 Mid-term training plan (2006-2011) is reviewed. 1-4 Module textbook is drafted. 1-5 Teacher training courses are planned. 1-6 Teacher training textbook is drafted. 2-1 Equipment for the TTC is installed. 2-2 Orientation for participants is conducted. 2-3 Teacher training courses are implemented. 2-4 Seminars on management of IAT Department are conducted for the expansion schools. 3-1 Standard of evaluation of teacher training courses and evaluation materials are drafted. 3-2 Teacher training courses are evaluated properly. 3-3 Monitoring on VET of IAT at the expansion schools is implemented. 3-4 The teacher training course and training textbook is reviewed. 4-1 Role of the TTC in the Long term strategy is identified. 4-2 Long term strategy to operate the TTC is drafted and submitted to GDTVE of the MoNE	Turkish side: • Administrative personnel • Project counterparts -Trainers of TTC -Coordinator • Office and office equipment for JICA experts • Training equipment for TTC • Project costs -Expenses for teacher training courses -Salaries and other allowances for the Turkish staffs -Customs clearance, inland handling of the Project equipment provided by JICA -Expenses for maintenance of the Project facilities and equipment -Expenses for electricity, water, gas, fuel and other contingencies -Other necessary local expenses of the Project Japanese side: • Experts • Supplemental equipment • Counterpart training in Japan • Supplemental expenses	Teachers of IAT Department in the expansion schools are appointed in time **Preconditions** Necessary budgets of TTC are appropriately allocated. Appropriate number of the project counterparts is assigned.

ANNEX 2 PLAN OF OPERATION

Project Title: The Project on Strengthening the Program for Expanding Industrial Automation Technologies Department — Version. No. 2.0

Duration: August 2007 to September 2010 — Date: 18 April 2007

	2007				2008				2009				2010		
	1/2/3	4/5/6	7/8/9	10/11/12	1/2/3	4/5/6	7/8/9	10/11/12	1/2/3	4/5/6	7/8/9	10/11/12	1/2/3	4/5/6	7/8/9
Project Activities															
1-1 Baseline survey of IAT department of expansion schools is conducted.															
1-2 Organizational structure of the TTC is arranged.															
1-3 Mid-term training plan (2006-2011) is reviewed.															
1-4 Module textbook is drafted.															
1-5 Teacher training courses are planned.															
1-6 Teacher training textbook is drafted.															
2-1 Equipment for the TTC is installed.															
2-2 Orientation for participants is conducted.															
2-3 Teacher training courses are implemented.															
(Teacher training courses for adjacent departments)															
2-4 Seminars on management of IAT Department are conducted for the expansion schools.															
3-1 Standard of evaluation of teacher training courses and evaluation materials are drafted.															
3-2 Teacher training courses are evaluated properly.															
3-3 Monitoring on VET of IAT at the expansion schools is implemented.															
3-4 The teacher training course and training textbook is reviewed.															
4-1 Role of the TTC in the Long term strategy is identified.															
4-2 Long term strategy to operate the TTC is drafted and submitted to GDTVE of the MoNE															
JCC															
Joint Evaluation															

Annex 3 IN-SERVICE TRAINING ACTIVITIES GENERAL DIRECTORATE OF TECHNICAL AND VOCATIONAL EDUCATION, 2006

ACTIVITY NO	NAME OF THE EDUCATIONAL ACTIVITY	PARTICIPANTS	LOCATION	DATE	PERIOD (DAY)	NUMBER OF PARTICIPANTS	NOTES
32	**CONSTRUCTION PAINT COURSES**	Teachers of Workshop and Vocational Courses working in the field of Construction Technology of Technical Schools	**DYO Paint Factory Trading Inc. GEBZE KOCAELİ**	13.02.2006 17.02.2006	5	15	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Gebze STFA Vocational high school KOCAELİ
163	**WELDING DEVELOPMENT COURSE**	Teachers of Workshop and Vocational Courses working in the departments of Levelling, Metalworks, Ship Construction, Machinery, and Installation Technology of Technical Schools	**GEDİK Holding Education Foundation**	05.06.2006 09.06.2006	5	20	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Tuzla Vocational high school İSTANBUL
178	**PLC APPLICATIONS COURSE IN ELECTRO PNEUMATIC SETS**	Teachers of Workshop and Vocational Courses working in the departments of Electric, Electronics, Machinery, Mechatronics, ındustrial Electronics, and Industrial Automation of Technical Schools	**Tuzla Vocational High school İSTANBUL**	12.06.2006 16.06.2006	5	16	Those who are determined by General Directorate of Technical Education for Males shall join
179	**BASIC LEVEL OF PIC (16F84,16F628) TRAINING COURSE**	Teachers of Workshop and Vocational Courses working in the departments of Electronics and Industrial Electronics of Technical Schools	**Tuzla Vocational High school İSTANBUL**	12.06.2006 16.06.2006	5	12	Those who are determined by General Directorate of Technical Education for Males shall join
180	**BASIC LEVEL OF PLC COURSE**	Teachers of Workshop and Vocational Courses working in the departments of Electric, Electronics, Machinery, Mechatronics, Industrial Electronics, Industrial Automation of Technical Schools	**Tuzla Vocational High school İSTANBUL**	12.06.2006 16.06.2006	5	20	Those who are determined by General Directorate of Technical Education for Males shall join
201	**BASIC PNEUMATIC AND HIDROLIC COURSE**	Teachers of Workshop and Vocational courses Working in the department of Mechatronics in Ankara Balgat, Kocaeli Gebze, STFA and Bursa Hürriyet Vocational high schools	**MAN Turkey INC. ANKARA**	19.06.2006 23.06.2006	5	8	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Hotel Business and Tourism Vocational High School Pension ANKARA

202	**BASIC LEVEL OF APPLIED COMPUTER WEB SYSTEMS COURSE**	Teachers of Workshop and Vocational Courses working in the department of Computer of Technical Schools	**Tuzla Vocational High school İSTANBUL**	19.06.2006 23.06.2006	5	16	Those who are determined by General Directorate of Technical Education for Males shall join
203	**WEB PROGRAMMING (PHP-MYSQL) COURSE**	Teachers of Workshop and Vocational Courses working in the department of Computer of Technical Schools	**Tuzla Vocational High school İSTANBUL**	19.06.2006 23.06.2006	5	20	Those who are determined by General Directorate of Technical Education for Males shall join

ACTIVITY NO	NAME OF THE EDUCATIONAL ACTIVITY	PARTICIPANTS	LOCATION	DATE	PERIOD (DAY)	NUMBER OF PARTICIPANT	NOTES
226	**ADVANCED LEVEL OF DIESEL COURSE**	Teachers of Workshop and Vocational courses Working in the department of otomotive in Adana, İzmir, Engine Vocational high schools, Ankara Güvercinlik, İstanbul Şişli, Kartal, Samandıra, Bursa Hürriyet Vocational high schools.	**TOFAŞ Technical Education Center, BURSA**	26.06.2006 30.06.2006	5	12	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** A.Ö. Sönmez Vocational School BURSA
227	**BASIC LEVEL OF GRAPHIC DESIGN I COURSE**	Teachers with the basic knowledge of graphic design in the departments of computer, electronics and printing in technical education schools	**Bornova Mazhar Zorlu Anatolian Technical and Plastic Vocational High School İZMİR**	26.06.2006 30.06.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Bornova Apprenticeship Education Center İZMİR
228	**COMPUTER – AIDED DRAWING (AUTOCAD) COURSE**	Teachers of Workshop and Vocational courses with the basic knowledge of computer, in the departments of machinery and levelling in technical education schools	**Bornova Mazhar Zorlu Anatolian Technical and Plastic Vocational High School İZMİR**	26.06.2006 30.06.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Bornova Apprenticeship Education Center İZMİR
229	**DATABASE PROGRAMMING COURSE WITH VISUAL BASIC**	Teachers of Workshop and Vocational courses with the knowledge of Visual Basic in technical education schools	**Bornova Mazhar Zorlu Anatolian Technical and Plastic Vocational High School İZMİR**	26.06.2006 30.06.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Bornova Apprenticeship Education Center İZMİR
242	**CNC-TECHNICAL COURSE**	Teachers of Workshop and Vocational courses in the departments of Machinery, Levelling,	**Gebze Çayırova STFA Anatolian**	26.06.2006	12	20	Those who are selected among the applicants by General Directorate of Technical Education for

		Mold, CNC, Metal, Industrial Mechanics of technical education schools	**Technical School KOCAELİ**	07.07.2006			Males shall join
250	**ADVANCED LEVEL OF ENGINE COURSE**	Teachers of Workshop and Vocational courses in the department of Otomotive of technical education schools in Adana, İzmir Engine vocational high schools, Ankara Güvercinlik, İstanbul Şişli, Kartal, Samandıra, Bursa Hürriyet Vocational high schools	**TOFAŞ Technical Education Center, BURSA**	03.07.2006 07.07.2006	5	12	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** A.Ö. Sönmez Vocational School BURSA
251	**DIESEL SYSTEMS COURSE**	Teachers of Workshop and Vocational courses in the department of Otomotive in technical education schools	**RENAULT-MAIS INC. Education Center, İSTANBUL**	03.07.2006 07.07.2006	5	15	Those who are determined by General Directorate of Technical Education for Males shall join
252	**ELECTRONIC EQUIPMENT COURSE**	Teachers of Workshop and Vocational courses in the department of Otomotive in technical education schools	**RENAULT-MAIS INC. Education Center, İSTANBUL**	03.07.2006 07.07.2006	5	15	Those who are determined by General Directorate of Technical Education for Males shall join

ACTIVITY NO	NAME OF THE EDUCATIONAL ACTIVITY	PARTICIPANTS	LOCATION	DATE	PERIOD (DAY)	NUMBER OF PARTICIPANT	NOTES
253	**BASIC COMPUTER WEBS COURSE**	Teachers of workshop and vocational courses with the knowledge of Basic Computer working in the departments of Electric, Electronics and Computer in technical education schools	**Selçuklu Adil Karaağaç Anatolian Technical High School KONYA**	03.07.2006 07.07.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Meram Teachers' Lodging KONYA
254	**BASIC LEVEL OF PLC PROGRAMMING COURSE**	Teachers of workshop and vocational courses with the knowledge of Basic Computer working in the departments of Electric, Electronics and Computer in technical education schools	**Selçuklu Adil Karaağaç Anatolian Technical High School KONYA**	03.07.2006 07.07.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Meram Teachers' Lodging KONYA
255	**BASIC LEVEL OF PIC 16F84 MICRO CONTROLLER COURSE**	Teachers of workshop and vocational courses with the knowledge of Basic Computer working in the departments of Electric, Electronics and Computer in technical education schools	**Selçuklu Adil Karaağaç Anatolian Technical High School KONYA**	03.07.2006 07.07.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Meram Teachers' Lodging KONYA
256	**COMPUTER-**	Teachers of workshop	**Bornova**				Those who are

	AIDED DRAWING COURSE (SOLIDWORKS)	and vocational courses working in the departments of Electric, electronics and Computer in technical education schools	**Mazhar Zorlu Anatolian Technical and Plastic Vocational High School İZMİR**	03.07.2006 07.07.2006	5	18	determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Bornova Apprenticeship Education Center İZMİR
280	**ADVANCED LEVEL OF ELECTRIC-ELECTRONİCS COURSE**	Teachers of Workshop and Vocational courses in the department of Otomotive in Adana, İzmir Engine vocational high school, Ankara Güvercinlik, İstanbul Şişli, Kartal, Samandıra, Bursa Hürriyet Vocational high schools	**TOFAŞ Technical Education Center, BURSA**	10.07.2006 14.07.2006	5	12	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** A.Ö. Sönmez Vocational School BURSA
292	**CAD/CAM (MASTERCAM) COURSE**	Teachers of workshop and vocational courses working in the departments of CNC (Numerical control on computer), Machinery, Levelling, Mold, Machinery Painting, Hydrolic Pneumatic Technology, Mechatronics, Industrial Automation in technical education schools	**Alanya Vocational High School ANTALYA**	10.07.2006 21.07.2006	12	20	Those who are determined by General Directorate of Technical Education for Males shall join
301	**WINDOWS 2003 SERVER AND DOMAIN CONTROL SYSTEM INSTALLATION COURSE**	Teachers of workshop and vocational courses with the knowledge of Basic Computer working in the departments of Electric, Electronics and Computer in technical education schools	**Selçuklu Adil Karaağaç Anatolian Technical High School KONYA**	17.07.2006 21.07.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Meram Teachers' Lodging KONYA

ACTIVITY NO	NAME OF THE EDUCATIONAL ACTIVITY	PARTICIPANTS	LOCATION	DATE	PERIOD (DAY)	NUMBER OF PARTICIPANT	NOTES
302	**COMPUTER-AIDED FURNITURE AND DECORATION DESIGNING COURSE**	Teachers of workshop and vocational course working in the department of Furniture and Decoration in technical education schools	**Gazi Vocational High School ANKARA**	17.07.2006 21.07.2006	5	20	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Hotel Business and Tourism Vocational High School Pension ANKARA
317	**SERVER INSTALLATIONS COURSE IN LINUX-FEDORA OPERATING SYSTEM COURSE**	Teachers of workshop and vocational course with the knowledge of Basic Computer and Linux Operating System working technical education	**Selçuklu Adil Karaağaç Anatolian Technical High School KONYA**	24.07.2006 28.07.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Meram Teachers'

		schools					Lodging KONYA
318	**C AND PIC MICRO CONTROLLER AUDITING COURSE**	Teachers with the knowledge of Basic Computer working in the departments of electric, Electronics and Computer in technical education schools	**Selçuklu Adil Karaağaç Anatolian Technical High School KONYA**	24.07.2006 28.07.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Meram Teachers' Lodging KONYA
337	**CNC LATHE AND CNC UPRIGHT PROCESSING CENTER SIMULATOR TRAINING COURSE (FANUC PROGRAMMING)**	Teachers of workshop and vocational courses working in the departments of CNC (Numerical control on computer), Machinery, Levelling, Mold, Hydrolic Pneumatic Technology, Mechatronics, Industrial Automation in technical education schools	**Gazi Vocational High School ANKARA**	31.07.2006 11.08.2006	12	20	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Hotel Business and Tourism Vocational High School Pension ANKARA
338	**SOLVING MACHINERY PROBLEMS COURSE WITH VISUAL BASIC PROGRAM**	Teachers of workshop and vocational courses working in the departments of CNC (Numerical control on computer), Machinery, Levelling, Mold, Hydrolic Pneumatic Technology, Mechatronics, Industrial Automation in technical education schools	**Kuşadası Vocational High School AYDIN**	31.07.2006 11.08.2006	12	20	Those who are determined by General Directorate of Technical Education for Males shall join
350	**CNC LATHE CUTTER COURSE**	Teachers of workshop and vocational courses with the knowledge of Basic Computer working in the departments of Machinery and Levelling in technical education schools	**Bornova Mazhar Zorlu Anatolian Technical and Plastic Vocational High School İZMİR**	07.08.2006 11.08.2006	5	18	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Bornova Apprenticeship Education Center İZMİR

ACTIVITY NO	NAME OF THE EDUCATIONAL ACTIVITY	PARTICIPANTS	LOCATION	DATE	PERIOD (DAY)	NUMBER OF PARTICIPANT	NOTES
351	**GRAPHIC DESIGN COURSE II**	Teachers with the basic knowledge in Graphic Design working in the departments of Computer, Electronics and Printing in technical education schools	**Bornova Mazhar Zorlu Anatolian Technical and Plastic Vocational High School İZMİR**	07.08.2006 11.08.2006	5	18	Those who are selected by General Directorate of Technical Education for Males shall join **Accomodation Place:** Bornova Apprenticeship Education Center İZMİR
352	**GENERAL ELECTRIC ARC WELDING COURSE**	Teachers of workshop and vocational courses working in the department of	**ECZACIBAŞI -Lincoln Electric**	07.08.2006	5	20	Those who are determined by General Directorate of Technical Education for Males shall

		Metalworks and Installation Technology in technical education schools	**Askaynak Tuzla/ İSTANBUL**	11.08.2006			join **Accomodation Place:** Tuzla Vocational High School İSTANBUL
357	**IN AUTOMATION SYSTEM SENSORS AND PLC APPLICATIONS COURSE**	Teachers of workshop and vocational courses working in the departments of Computer (software), Computer (hardware), Electric and Electronics in technical education schools	**Kağıthane Profilo Anatolian Technical High School İSTANBUL**	07.08.2006 18.08.2006	12	20	Those who are selected by General Directorate of Technical Education for Males shall join
365	**GENERAL ELECTRIC ARC WELDING COURSE**	Teachers of workshop and vocational courses working in the department of Metalworks and Installation Technology in technical education schools	**ECZACIBAŞI -Lincoln Electric Askaynak Tuzla/ İSTANBUL**	14.08.2006 18.08.2006	5	20	Those who are determined by General Directorate of Technical Education for Males shall join **Accomodation Place:** Tuzla Vocational High School İSTANBUL
371	**SOLID MODELLING (SOLIDWORKS) COURSE**	Teachers of workshop and vocational courses working in the departments of CNC (Numerical control on computer), Machinery, Levelling, Mold, Hydrolic Pneumatic Technology, Casting, Industrial Mechanics, machinery Painting, Construction Painting, Metalworks, Furniture and Decorartion, Modelling, Mechatronics, Idustrial Automation in technical education schools	**Karşıyaka Vocational High School İZMİR**	14.08.2006 25.08.2006	12	20	Those who are determined by General Directorate of Technical Education for Males shall join
519	**INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT, TEACHERS' TRAINING COURSE**	Teachers of workshop and vocational courses working in the department of Industrial Automation Technologies in technical high schools. This is for predetermined teachers for this field.	**Selçuklu Adil Karaağaç Anatolian Technical High School KONYA**	20.03.2006 28.04.2006	40	20	Those who are determined by General Directorate of Technical Education for Males shall join
520	**INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT, TEACHERS' TRAINING COURSE**	Teachers of workshop and vocational courses working in the department of Industrial Automation Technologies in technical high schools. This is for predetermined teachers for this field.	**Bornova Mazhar Zorlu Anatolian Technical and Plastic Vocational High School İZMİR**	20.03.2006 28.04.2006	40	10	Those who are determined by General Directorate of Technical Education for Males shall join

ACTIVITY NO	NAME OF THE EDUCATIONAL ACTIVITY	PARTICIPANTS	LOCATION	DATE	PERIOD (DAY)	NUMBER OF PARTICIPANTS	NOTES
529	**WORKSHOP AND LAB MANAGEMENT COURSE**	Chiefs of department, workshop and lab working in technical education schools.	**Edremit Vocational High School BALIKESİR**	03.07.2006 07.07.2006	5	50	Those who are selected by General Directorate of Technical Education for Males shall join
530	**SCHOOL MANAGEMENT COURSE**	Deputies to principal of schools/ institutions that have never joined in seminar before working in technical education schools.	**Fethiye Vocational High School MUĞLA**	10.07.2006 14.07.2006	5	50	Those who are selected by General Directorate of Technical Education for Males shall join
531	**WORKSHOP AND LAB MANAGEMENT COURSE**	Chiefs of department, workshop and lab working in technical education schools.	**Kuşadası Vocational High School AYDIN**	17.07.2006 21.07.2006	5	50	Those who are selected by General Directorate of Technical Education for Males shall join
532	**WORKSHOP AND LAB MANAGEMENT COURSE**	Chiefs of department, workshop and lab working in technical education schools.	**Fethiye Vocational High School MUĞLA**	24.07.2006 28.07.2006	5	40	Those who are selected by General Directorate of Technical Education for Males shall join
533	**SCHOOL MANAGEMENT COURSE**	Deputies to principal of schools/ institutions that have never joined in seminar before working in technical education schools.	**Alanya Vocational High School ANTALYA**	31.07.2006 04.08.2006	5	50	Those who are selected by General Directorate of Technical Education for Males shall join
534	**SCHOOL MANAGEMENT COURSE**	Deputies to principal of schools/ institutions that have never joined in seminar before working in technical education schools.	**Kuşadası Vocational High School AYDIN**	14.08.2006 18.08.2006	5	40	Those who are selected by General Directorate of Technical Education for Males shall join
535	**INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT, TEACHERS' TRAINING COURSE**	Teachers of workshop and vocational courses working in the department of Industrial Automation Technologies in technical high schools. This is for predetermined teachers for this field.	**Bornova Mazhar Zorlu Anatolian Technical and Plastic Vocational High School İZMİR**	04.09.2006 08.12.2006	96	30	Those who are determined by General Directorate of Technical Education for Males shall join
536	**RAIL SYSTEMS TECHNOLOGY COURSE**	Teachers of workshop and vocational courses to be assigned in project in technical education high schools.	**It shall be determined at a later time**	It shall be determined at a later time	5	20	Those who are determined by General Directorate of Technical Education for Males shall join

ACTIVITY NO	NAME OF THE EDUCATIONAL ACTIVITY	PARTICIPANTS	LOCATION	DATE	PERIOD (DAY)	NUMBER OF PARTICIPANTS	NOTES
537	**INFORMATICS TECHNOLOGIES COURSE**	Teachers of workshop and vocational courses to be assigned in project in technical education high schools.	**It shall be determined at a later time**	It shall be determined at a later time	5	30	Those who are determined by General Directorate of Technical Education for Males shall join
538	**NATURAL GAS REPAIR AND MAINTENANCE COURSE**	Teachers of in the departments of installation technology, cooling and air-conditioning in technical education high schools.	**It shall be determined at a later time**	It shall be determined at a later time	5	20	Those who are determined by General Directorate of Technical Education for Males shall join

Annex4 Number of Students and Teachers in the Expansion Schools

Türk Dili	English
Kurum Türü	**Type of School**
Anadolu Meslek Lisesi (ErkekTeknik)	Anatolia Vocational High School
Anadolu Teknik Lisesi	Anatolia Technical High School
Endüstri Meslek Lisesi	Industrial Vocational High School
Teknik Lise	Technical High School

Bölüm	**Department**
Bilgisayar (Donanım)	Computer (Hardware)
Bilgisayar (Yazılım)	Computer (Software)
Bilgisayarlı Numerık Kontrol (CNC)	Computerized Numerical Control (CNC)
Bilişim Teknolojileri	Information Technologies
Boya-Apre	Sizing
Döküm	Casting/Molding
Döküm Teknolojisi (MEGEP)	Casting Technology (MEGEP)
Dokuma	Weaving
Elektrik	Electricity
Elektrik-Elektronik Teknolojisi (MEGEP)	Electricity-Electronics Technology (MEGEP)
Elektronik	Electronics
Endüstriyel Elektronik	Industrial Electronics
Endüstriyel Mekanik	Industrial Mechanics
Endüstriyel Otomasyon Teknolojileri (Elektronik)	Industrial Automation Technologies (Electronics)
Endüstriyel Otomasyon Teknolojileri (Mekanik)	Industrial Automation Technologies (Mechanics)
Gemi Makinaları	Ship Engines
Gıda Teknolojisi	Food Technology
Güverte	Deck (Deckhands)
İnşaat Teknolojisi (MEGEP)	Building Technology (MEGEP)
Iplik	Fiber/Strand
Kimya	Chemistry
Konfeksiyon	Ready-made Clothing
Makina	Machinery
Makina Ressamlığı	Machine Drawing
Makine Teknolojisi (MEGEP)	Machinery Technology (MEGEP)
Matbaa	Printing
Metal Işleri	Metal Works
Metal Teknolojisi (MEGEP)	Metal Techmology (MEGEP)
Mobilya ve Dekorasyon	Furniture and Decoration
Model	Model
Motor	Motor
Otomotive Teknolojisi (MEGEP)	Automotive Technology (MEGEP)
Plastik İşleme	Plastic Processing
Raylı Sistemler Tekrıolojisi	Railway Systems Technology
Tekstil (Dokuma)	Textile (Weaving)
Tesisat Teknolojisi (Isıtma-Sıhhi Tesisat)	Installation Technology (Heating-Sanitary Installation)
Tesviye	Benching
Yapı	Construction
Yapı Ressamlığı	Construction Drawing

Alan	**Field**
AHŞAP TEKNOLOJİSİ ALANI	Furniture Technology Field
BİLGİŞAYAR ALANI	Not included in the new 42 fields
BILIŞIM TEKNOLOJILERI ALANI	Information Technologies Field
DENİZCİLİK ALANI	Seamanship Field
ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	Electricity-Electronics Technology Field
ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	Industrial Automation Technologies Field
GIDA TEKNOLOJISI ALANI	Food Technology Field
GİYİM ÜRETİM TEKNOLOJİSİ ALANI	Clothing Production Technology Field
İNŞAAT TEKNOLOJİSİ ALANI	Building Technology Field
KİMYA TEKNOLOJİSİ ALANI	Chemistry and Processing Technology Field
MAKINA TEKNOLOJISI ALANI	Machinery Technology Field
MATBAA ALANI	Printing Field
METAL TEKNOLOJİSİ ALANI	Metal Casting and Pattern-Making Technology Field
MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	Motor Vehicles Technology Field
PLASTİK TEKNOLOJİSİ ALANI	Plastic Technology Field
RAYLI SİSTEMLER TEKNOLOJİSİ ALANI	Railway Systems Technology Field
TEKNOLOJİLERİ ALANI	Not included in the new 42 fields
TEKSTİL TEKNOLOJİSİ ALANI	Textile Technology Field
TESİSAT TEKNOLOJİSİ VE İKLİMLENDİRME ALANI	Energy and Installation Field

Branşı	Branch
Beden Eğitimi	Sport
Bilgisayar	Computer
Biyoloji	Biology
Bes/Gıda Tek.Ev Y.ve Bes.	Nutrition/Food Technology
Coğrafya	Geography
Din Kült. ve AhI.Bil.	Religious and Moral
EI Sanatları/Dekoratif San	Handcraft/Decırative Arts
Elektrik	Electricity
Elektronık/Telekomınıkas.	Electronics and Telecommunication
Felsefe	Philosophy
Fızık	Physics
Ingilizce	English
Kimya	Chemistry
Makine Ressamlığı	Machine Drawing
Makine,Tesviye,Kalıp	Machine, Benching, Moulding
Matematik	Mathematics
Metal İşleri	Metal Works
Mobilya ve Dekorasyon	Furniture and Decoration
Rehber Öğretmen	Guidance Teacher
Tarih	History
Tekstil	Textile
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	Turkish Language and Literature
Yapi/Yapi Ressamlığı/Harita ve Kadastro	Construction/Construction Drawing/Cadastre
Türkçe	Turkish

Annex4-1

ADANA MERKEZ EML

Kurum Bünyesindeki Okullar ve Öğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	54	2	56
2	Anadolu Teknik Lisesi	165	24	189
3	Endüstri Meslek Lisesi	1,402	184	1,586
4	Teknik Lise	188	17	205
	Total	1,809	227	2,036

Kurum Bünyesindeki Okulların Bdlümleri ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Elektrik	10	22	1	23
	Elektrik	11	16	1	17
	Elektrik	12	11	0	11
	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	23	2	25
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	11	1	12
	Otomatik Kumanda	10	24	4	28
	Otomatik Kumanda	11	10	9	19
	Otomatik Kumanda	12	7	4	11
Endüstri Meslek Lisesi	Bilgisayar (Donanım)	10	2	0	2
	Bilgisayar (Donanım)	11	41	6	47
	Dokuma	10	5	0	5
	Dokuma	11	41	23	64
	Elektrik	10	5	0	5
	Elektrik	11	71	2	73
	Elektronik	10	2	2	4
	Elektronik	11	82	4	86
	İplik	10	1	2	3
	İplik	11	48	16	64
	Makina Ressamlığı	10	6	1	7
	Makina Ressamlığı	11	34	28	62
	Metal Işleri	10	13	0	13
	Metal Işleri	11	71	0	71
	Mobilya ve Dekorasyon	10	2	0	2
	Mobilya ve Dekorasyon	11	26	0	26
	Tesviye	10	7	0	7
	Tesviye	11	93	0	93
Teknik Lise	Bilgisayar (Donanım)	12	12	3	15
	Bilgisayarlı Numerık Kontrol (CNC)	11	27	1	28
	Bilgisayarlı Numerık Kontrol (CNC)	12	27	1	28
	Elektrik	11	17	0	17
	Elektrik	12	12	0	12
	Elektronik	11	22	6	28
	Elektronik	12	19	1	20

Kurum Bünyesindeki Okulların Alanları ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	54	2	56
Anadolu Teknik Lisesi	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	41	2	43
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	20	0	20
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	52	9	61
	MAKİNA TEKNOLOJİSİ ALANI	10	45	5	50
	METAL TEKNOLOJİSİ ALANI	10	17	0	17
	TEKSTİL TEKNOLOJİSİ ALANI	10	14	18	32
Teknik Lise	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	30	3	33
	MAKİNA TEKNOLOJİSİ ALANI	10	22	2	24

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Almanca	1		1
Beden Eğitimi	1		1
Bilgisayar	3		3
Biyoloji	2	1	3
Coğrafya		1	1
Din Kült. ve AhI.Bil.	1	1	2
Döküm/Endüstriyel Döküm	1		1
Elektrik	10	1	11
Elektronık/Telekomınıkas.	8	3	11
Felsefe	1		1
Fızık	3	2	5
Ingilizce	4	1	5
Kimya	1	3	4
Makine Ressamlığı	7	2	9
Makine,Tesviye,Kalıp	23		23
Matematik	4	5	9
Metal İşleri	8		8
Mobilya ve Dekorasyon	5		5
Model	3		3
Rehber Öğretmen		1	1
Sosyal Bilgiler	1	1	2
Tarih	1	2	3
Tekstil	15	2	17
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	3	5	8
	106	31	137

Annex4-2

AFYONKARAHISAR GAZI EML

Kurum Bünyesindeki Okullar ve Öğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	58	2	60
2	Anadolu Teknik Lisesi	105	14	119
3	Endüstri Meslek Lisesi	755	34	789
4	Teknik Lise	41	6	47
	Total	959	56	1,015

Kurum Bünyesindeki Okulların Bdlümleri ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Bilgisayar (Yazılım)	10	53	7	60
	Bilgisayar (Yazılım)	11	25	4	29
Endüstri Meslek Lisesi	Bilgisayar (Yazılım)	11	45	10	55
	Elektronik	11	86	0	86
	Gıda Teknolojisi	11	26	3	29
	Kimya	11	32	3	35
	Mobilya ve Dekorasyon	11	35	0	35
	Tesisat Teknolojisi (Isıtma-Sıhhi Tesisat)	11	55	0	55
Teknik Lise	Bilgisayar (Yazılım)	11	17	4	21

Kurum Bünyesindeki Okulların Alanları ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	58	2	60
Anadolu Teknik Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	9	27	3	30
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	18	0	18
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	27	3	30
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	62	0	62
	GIDA TEKNOLOJİSİ ALANI	10	25	2	27
	KİMYA TEKNOLOJİSİ ALANI	10	12	1	13
	TESİSAT TEKNOLOJİSİ VE İKLİMLENDİRME ALANI	10	16	0	16
Teknik Lise	BİLİŞİM TEKNOLOJİLERİ ALANI	10	24	2	26

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bes/Gıda Tek.Ev Y.ve Bes.		1	1
Bilgisayar	7	1	8
Biyoloji	2		2
Coğrafya	2		2
Din Kült. ve AhI.Bil.	2		2
Elektrik	1		1
Elektronık/Telekomınıkas.	6		6
Felsefe	1		1
Fen Bilgisi/Fen ve Teknoloji	2		2
Fızık	3		3
Ingilizce	3		3
Kimya	1	3	4
Matematik	5	2	7
Mobilya ve Dekorasyon	4		4
Rehber Öğretmen	1	1	2
Tarih	3		3
Tesisat Teknolojisi	5		5
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	1	2	3
Türkçe		1	1
	50	11	61

Annex4-3

ANKARA ISKITLER EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	200	9	209
2	Anadolu Teknik Lisesi	54	2	56
3	Endüstri Meslek Lisesi	1,259	24	1,283
4	Teknik Lise	204	3	207
	Total	1,717	38	1,755

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	Bilgisayar (Donanım)	10	51	6	57
Anadolu Teknik Lisesi	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	28	2	30
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	26	0	26
Endüstri Meslek Lisesi	Dokuma	11	10	2	12
	Elektrik	10	16	0	16
	Elektrik	11	123	0	123
	Elektronik	10	15	1	16
	Elektronik	11	79	1	80
	Makina Ressamlığı	10	8	1	9
	Makina Ressamlığı	11	75	1	76
	Metal Işleri	10	15	0	15
	Metal Işleri	11	50	0	50
	Mobilya ve Dekorasyon	10	9	0	9
	Mobilya ve Dekorasyon	11	48	0	48
	Tesviye	10	10	0	10
	Tesviye	11	88	0	88
	Yapı Ressamlığı	11	55	4	59
Teknik Lise	Elektrik	11	27	0	27
	Elektrik	12	13	0	13
	Elektronik	11	34	0	34
	Elektronik	12	17	0	17
	Makina Ressamlığı	11	21	0	21
	Makina Ressamlığı	12	8	0	8
	Yapı Ressamlığı	11	21	3	24
	Yapı Ressamlığı	12	10	0	10

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	BİLİŞİM TEKNOLOJİLERİ ALANI	9	60	0	60
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	29	0	29
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	60	3	63
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJISI ALANI	10	17	0	17
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	30	0	30
	INŞAAT TEKNOLOJISI ALANI	10	27	4	31
	MAKİNA TEKNOLOJİSİ ALANI	10	27	1	28
	METAL TEKNOLOJİSİ ALANI	10	19	0	19
Teknik Lise	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	28	0	28
	İNŞAAT TEKNOLOJİSİ ALANI	10	14	0	14
	MAKİNA TEKNOLOJİSİ ALANI	10	11	0	11

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	2		2
Bilgisayar	3	1	4
Biyoloji		3	3
Coğrafya		1	1
Din Kült. ve AhI.Bil.	2		2
EI Sanatları/Dekoratif San		1	1
Elektrik	13		13
Elektronık/Telekomınıkas.	10		10
Felsefe	1	2	3
Fızık	4	2	6
Ingilizce	3	2	5
Kimya	2	3	5
Makine Ressamlığı	14		14
Makine,Tesviye,Kalıp	11		11
Matematik	3	5	8
Metal İşleri	12		12
Mobilya ve Dekorasyon	8		8
Rehber Oğretmen	2	1	3
Tarih	2	2	4
Tekstil		1	1
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	1	6	7
Yapi/Yapi Ressamlığı/Harita ve Kadastro	11	4	15
	104	34	138

Annex4-4

ANTALYA MERKEZ EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	286	5	291
2	Anadolu Teknik Lisesi	146	40	186
3	Endüstri Meslek Lisesi	1,370	113	1,483
4	Teknik Lise	155	8	163
	Total	1,957	166	2,123

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	Gemi Makinaları	10	35	0	35
	Gemi Makinaları	11	23	0	23
	Güverte	10	35	2	37
	Güverte	11	27	1	28
Anadolu Teknik Lisesi	Bilgisayar (Donanım)	10	46	13	59
	Bilgisayar (Donanım)	11	29	4	33
	Bilgisayar (Donanım)	12	6	6	12
	Bilişim Teknolojileri	9	27	9	36
	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	19	1	20
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	16	3	19
Endüstri Meslek Lisesi	Bilgisayar (Donanım)	11	38	11	49
	Elektrik	11	133	0	133
	Elektrik-Elektronik Teknolojisi (MEGEP)	11	32	3	35
	Elektronik	11	74	3	77
	İnşaat Teknolojisi (MEGEP)	11	40	3	43
	Metal Işleri	11	83	0	83
	Mobilya ve Dekorasyon	11	43	0	43
	Motor	11	132	0	132
	Tesviye	11	68	0	68
	Yapı	11	29	0	29
	Yapı Ressamlığı	11	16	23	39
Teknik Lise	Bilgisayar (Donanım)	11	29	4	33
	Bilgisayar (Donanım)	12	22	0	22
	Bilişim Teknolojileri	10	21	3	24
	Elektronik	10	23	0	23
	Elektronik	11	31	0	31
	Elektronik	12	29	1	30

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	DENİZCİLİK ALANI	10	1	0	1
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	10	3	0	3
	DENİZCİLİK ALANI	9	46	1	47
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	48	1	49
Anadolu Teknik Lisesi	BİLGİŞAYAR ALANI	10	3	3	6
	BİLGİŞAYAR ALANI	11	0	1	1
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	27	9	36
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	16	1	17
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	24	3	27
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	62	1	63
	İNŞAAT TEKNOLOJİSİ ALANI	10	26	6	32
	MAKİNA TEKNOLOJİSİ ALANI	10	23	5	28
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	33	0	33
Teknik Lise	BİLİŞİM TEKNOLOJİLERİ ALANI	10	21	3	24
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	23	0	23
	BİLİŞİM TEKNOLOJİLERİ ALANI	11	29	4	33
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	11	31	0	31
	BİLİŞİM TEKNOLOJİLERİ ALANI	12	22	0	22
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	12	29	1	30

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	2	2	4
Bilgisayar	6	1	7
Biyoloji	2	2	4
Coğrafya		2	2
Din Kült. ve AhI.Bil.	2		2
Elektrik	11	2	13
Elektronık/Telekomınıkas.	11		11
Felsefe	2	1	3
Fen Bilgisi/Fen ve Teknoloji	2		2
Fızık	2	3	5
Güverte	2		2
İlköğetim Matematik Öğr.		1	1
Ingilizce	1	4	5
Kimya	1	2	3
Makine,Tesviye,Kalıp	9		9
Matematik	4	5	9
Metal İşleri	9		9
Mobilya ve Dekorasyon	6		6
Motor	14	1	15
Rehber Öğretmen	1	3	4
Sosyal Bilgiler	1	1	2
Tarih	4		4
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	1	9	10
Türkçe		1	1
Yapi/Yapi Ressamlığı/Harita ve Kadastro	6	3	9
	99	43	142

Annex4-5

BURSA ALI OSMAN SONMEZ

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	56	4	60
2	Anadolu Teknik Lisesi	549	146	695
3	Endüstri Meslek Lisesi	1,650	452	2,102
4	Teknik Lise	276	180	456
	Total	2,531	782	3,313

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Bilgisayar (Yazılım)	10	21	6	27
	Bilgisayar (Yazılım)	11	23	10	33
	Bilişim Teknolojileri	10	20	8	28
	Elektrik	10	28	0	28
	Elektrik	11	35	0	35
	Elektronik	10	27	0	27
	Elektronik	11	30	0	30
	Makina	10	20	1	21
	Makina	11	31	0	31
	Tekstil (Dokuma)	10	8	23	31
	Tekstil (Dokuma)	11	11	16	27
Endüstri Meslek Lisesi	Bilgisayar (Yazılım)	11	50	31	81
	Boya-Apre	11	61	55	116
	Dokuma	11	107	8	115
	Elektrik	11	123	0	123
	Elektrik-Elektronik Teknolojisi (MEGEP)	11	56	2	58
	Elektronik	11	132	2	134
	İplik	11	48	25	73
	Konfeksiyon	11	55	56	111
	Makine Teknolojisi (MEGEP)	11	55	1	56
	Tesviye	11	139	0	139
Teknik Lise	Bilgisayar (Yazılım)	11	13	10	23
	Bilgisayar (Yazılım)	12	7	0	7
	Boya-Apre	11	3	22	25
	Boya-Apre	12	4	15	19
	Dokuma	11	18	11	29
	Dokuma	12	7	3	10
	Elektrik	11	18	1	19
	Elektrik	12	15	0	15
	Elektronik	11	26	1	27
	Elektronik	12	18	2	20
	İplik	11	5	14	19
	İplik	12	11	2	13
	Konfeksiyon	11	3	22	25
	Konfeksiyon	12	4	16	20
	Makina	11	26	0	26
	Makina	12	21	0	21

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	56	4	60
Anadolu Teknik Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	10	43	16	59
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	51	1	52
	MAKİNA TEKNOLOJİSİ ALANI	10	30	0	30
	TEKSTİL TEKNOLOJİSİ ALANI	10	8	20	28
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	44	21	65
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	70	3	73
	MAKİNA TEKNOLOJİSİ ALANI	9	36	2	38
	TEKSTİL TEKNOLOJİSİ ALANI	9	13	19	32
Endüstri Meslek Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	10	45	28	73
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	114	2	116
	GİYİM ÜRETİM TEKNOLOJİSİ ALANI	10	20	31	51
	MAKİNA TEKNOLOJİSİ ALANI	10	87	0	87
	TEKSTİL TEKNOLOJİSİ ALANI	10	47	42	89
Teknik Lise	BİLİŞİM TEKNOLOJİLERİ ALANI	10	9	14	23
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	41	5	46
	GİYİM ÜRETİM TEKNOLOJİSİ ALANI	10	0	16	16
	MAKİNA TEKNOLOJİSİ ALANI	10	24	0	24
	TEKSTİL TEKNOLOJİSİ ALANI	10	3	26	29

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	3	1	4
Bilgisayar	4	3	7
Biyoloji	1	4	5
Coğrafya	1		1
Din Kült. ve AhI.Bil.	3		3
Elektrik	16	1	17
Elektronık/Telekomınıkas.	6	2	8
Felsefe		2	2
Fızık	5	4	9
Fransizca	1		1
Giyim/Hazir Giyim/Moda Tas.	1	15	16
Ingilizce	2	9	11
Kimya	2	5	7
Makine,Tesviye,Kalıp	14	1	15
Matematik	6	7	13
Okul Öncesi/çoc. Gel. Eğ. Öğ.		1	1
Rehber Öğretmen	1		1
Tarih	2	3	5
Tekstil	17	15	32
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	4	8	12
	89	81	170

Annex4-6

DENİZLİ ŞEHİT ÖğRETMEN YUSUF BATUR

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	58	1	59
2	Anadolu Teknik Lisesi	111	1	112
3	Endüstri Meslek Lisesi	1,966	19	1,985
4	Teknik Lise	71	0	71
	Total	2,206	21	2,227

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Elektrik	10	21	0	21
	Elektrik	11	28	0	28
	Elektrik	12	4	0	4
Endüstri Meslek Lisesi	Bilgisayar (Yazılım)	11	43	4	47
	Elektrik	11	72	0	72
	Elektrik-Elektronik Teknolojisi (MEGEP)	11	63	0	63
	Elektronik	11	51	0	51
	Metal Işleri	11	47	0	47
	Mobilya ve Dekorasyon	11	77	0	77
	Motor	11	55	0	55
	Otomotive Teknolojisi (MEGEP)	11	43	0	43
	Tesviye	11	39	0	39
	Yapi	11	19	0	19
	Yapı Ressamlığı	11	37	9	46
Teknik Lise	Elektrik	12	16	0	16
	Makina	11	12	0	12

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	58	1	59
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	25	1	26
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	32	1	33
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	34	0	34
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	51	2	53
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	102	0	102
	İNŞAAT TEKNOLOJİSİ ALANI	10	35	2	37
	MAKİNA TEKNOLOJİSİ ALANI	10	39	0	39
	METAL TEKNOLOJİSİ ALANI	10	27	0	27
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	38	0	38
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	11	63	0	63
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	11	43	0	43
Teknik Lise	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	20	0	20
	MAKİNA TEKNOLOJİSİ ALANI	10	23	0	23

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1	1	2
Bilgisayar	4	1	5
Biyoloji		4	4
Coğrafya	3	1	4
Din Kült. ve AhI.Bil.	1		1
Elektrik	14	1	15
Elektronık/Telekomınıkas.	5	1	6
Felsefe	1		1
Fızık	4		4
Ingilizce	1	5	6
Kimya	1	2	3
Makine,Tesviye,Kalıp	9		9
Matematik	5	5	10
Metal İşleri	5		5
Mobilya ve Dekorasyon	9		9
Motor	10		10
Rehber Öğretmen	2		2
Tarih	3	3	6
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	3	8	8
Yapi/Yapi Ressamlığı/Harita ve Kadastro	11		11
	92	32	121

Annex4-7

ERZURUM ATATÜRK EML

Kurum Bünyesindeki Okullar ve Öğrenci Sayıları (01.11.2006)

Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	53	6	59
2	Anadolu Teknik Lisesi	341	20	361
3	Endüstri Meslek Lisesi	475	6	481
4	Teknik Lise	46	4	50
	Total	915	36	951

Kurum Bünyesindeki Okulların Bdlümleri ve Öğrenci Sayıları (01.11.2006)

Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Bilgisayar (Yazılım)	10	21	3	24
	Bilgisayar (Yazılım)	11	23	1	24
	Bilgisayar (Yazılım)	12	10	0	10
	Bilişim Teknolojileri	10	38	4	42
	Elektronik	10	19	0	19
	Elektronik	11	27	0	27
	Elektronik	12	6	0	6
Endüstri Meslek Lisesi	Bilgisayar (Yazılım)	11	24	0	24
	Elektrik	11	26	0	26
	Elektronik	11	27	0	27
	Kimya	11	16	0	16
	Mobilya ve Dekorasyon	11	11	0	11
	Motor	11	19	0	19
	Tesisat Teknolojisi (Isıtma-Sıhhi Tesisat)	11	9	0	9
Teknik Lise	Bilgisayar (Yazılım)	11	21	0	21
	Bilgisayar (Yazılım)	12	8	2	10

Kurum Bünyesindeki Okulların Alanları ve Öğrenci Sayıları (01.11.2006)

Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	53	6	59
Anadolu Teknik Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	10	64	4	68
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	27	0	27
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	78	6	84
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	30	0	30
Endüstri Meslek Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	10	29	1	30
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	45	1	46
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	11	0	11
Teknik Lise	BİLİŞİM TEKNOLOJİLERİ ALANI	10	17	2	19

Personel Bilgileri (01.11.2006)

Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bilgisayar	9		9
Biyoloji	1	2	3
Coğrafya		2	2
Din Kült. ve AhI.Bil.	1		1
Elektrik	5		5
Elektronık/Telekomınıkas.	6		6
Felsefe	1		1
Fen Bilgisi/Fen ve Teknoloji	1		1
Fızık	2	1	3
Ingilizce	5		5
Kimya	2	4	6
Makine,Tesviye,Kalıp	1		1
Matematik	3	3	6
Mobilya ve Dekorasyon	2	1	3
Motor	4		4
Rehber Öğretmen	2		2
Tarih	4		4
Tesisat Teknolojisi	1		1
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	2	2	4
Yapi/Yapi Ressamlığı/Harita ve Kadastro	3		3
Türkçe	2		2
	58	15	73

Annex4-8

ESKIŞEHIR ATATURK EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	250	23	273
2	Anadolu Teknik Lisesi	158	3	161
3	Endüstri Meslek Lisesi	1,930	166	2,096
4	Teknik Lise	303	40	343
	Total	2,641	232	2,873

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	Bilgisayarlı Numerık Kontrol (CNC)	11	27	2	29
	Endüstriyel Elektronik	9	31	5	36
	Endüstriyel Mekanik	9	32	0	32
	Makina	9	26	5	31
	Raylı Sistemler Tekrıolojisi	9	27	3	30
Anadolu Teknik Lisesi	Motor	11	32	0	32
	Motor	9	34	0	34
Endüstri Meslek Lisesi	Bilgisayar (Donanım)	11	26	15	41
	Döküm	11	25	0	25
	Döküm Teknolojisi (MEGEP)	11	19	0	19
	Elektrik	11	128	0	128
	Makina Ressamlığı	11	44	23	67
	Makine Teknolojisi (MEGEP)	11	32	4	36
	Matbaa	11	23	9	32
	Metal Işleri	11	92	0	92
	Metal Teknolojisi (MEGEP)	11	31	0	31
	Mobilya ve Dekorasyon	11	60	0	60
	Model	11	55	4	59
	Motor	11	307	0	307
	Tesviye	11	79	0	79
Teknik Lise	Elektrik	12	30	0	30
	Makina	12	41	0	41
	Makina Ressamlığı	12	7	9	16
	Motor	12	37	0	37

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	MAKINA TEKNOLOJISI ALANI	10	53	3	56
	RAYLI SISTEMLER TEKNOLOJISI ALANI	10	54	5	59
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	63	5	68
	MAKINA TEKNOLOJISI ALANI	9	26	5	31
	RAYLI SISTEMLER TEKNOLOJISI ALANI	9	27	3	30
Anadolu Teknik Lisesi	ENDUSTRIYEL OTOMASYON TEKNOLOJILERI A	10	46	3	49
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	46	0	46
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	9	34	0	34
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJISI ALANI	10	27	0	27
	BILIŞIM TEKNOLOJILERI ALANI	10	26	7	33
	ELEKTRIK-ELEKTRONIK TEKNOLOJISI ALANI	10	67	2	69
	MAKINA TEKNOLOJISI ALANI	10	120	14	134
	MATBAA ALANI	10	7	5	12
	METAL TEKNOLOJİSİ ALANI	10	29	0	29
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	73	0	73
Teknik Lise	ELEKTRIK-ELEKTRONIK TEKNOLOJISI ALANI	10	22	3	25
	MAKİNA TEKNOLOJİSİ ALANI	10	43	10	53
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	24	0	24

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	2	2	4
Bilgisayar	6	1	7
Biyoloji	3	1	4
Coğrafya	3		3
Din Kült. ve AhI.Bil.	2	1	3
Döküm/Endüstriyel Döküm	9		9
Elektrik	21		21
Felsefe	2	1	3
Fızık	4	2	6
Ilköğetim Matematik Oğr.	1		1
Ingilizce	5	4	9
Kimya	2	4	6
Makine Ressamlığı	12	3	15
Makine,Tesviye,Kalıp	22		22
Matbaa	3	1	4
Matematik	8	4	12
Metal Işleri	16		16
Mobilya ve Dekorasyon	9		9
Model	7	1	8
Motor	39	1	40
Rehber Oğretmen		1	1
Tarih	4	1	5
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	3	5	8
Türkçe	2		2
	185	33	218

Annex4-9

GAZİANTEP M. RÜŞTÜ UZEL EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	41	10	51
2	Anadolu Teknik Lisesi	113	18	131
3	Endüstri Meslek Lisesi	1,239	202	1,441
4	Teknik Lise	87	14	101
	Total	1,480	244	1,724

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Elektronik	10	19	5	24
	Elektronik	11	17	1	18
Endüstri Meslek Lisesi	Bilgisayar (Donanım)	10	0	1	1
	Bilgisayar (Donanım)	11	9	7	16
	Elektrik	10	7	0	7
	Elektrik	11	107	4	111
	Elektronik	10	1	1	2
	Elektronik	11	42	4	46
	İplik	10	6	1	7
	İplik	11	54	24	78
	Matbaa	10	4	0	4
	Matbaa	11	41	11	52
	Metal Işleri	10	7	0	7
	Metal Işleri	11	57	0	57
	Mobilya ve Dekorasyon	10	4	0	4
	Mobilya ve Dekorasyon	11	38	0	38
	Motor	10	7	0	7
	Motor	11	112	0	112
	Tesviye	10	17	0	17
	Tesviye	11	65	0	65
Teknik Lise	Bilgisayar (Yazılım)	11	13	5	18
	Bilgisayar (Yazılım)	12	5	0	5
	Elektrik	11	19	0	19
	Makina	11	11	0	11

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	41	10	51
Anadolu Teknik Lisesi	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	20	0	20
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	10	33	9	42
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	24	3	27
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	15	0	15
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	8	11	19
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	76	6	82
	MAKİNA TEKNOLOJİSİ ALANI	10	23	0	23
	MATBAA ALANI	10	17	10	27
	METAL TEKNOLOJİSİ ALANI	10	16	0	16
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	28	0	28
	TEKSTİL TEKNOLOJİSİ ALANI	10	20	10	30
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	11	11	14	25
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	11	19	0	19
	AHŞAP TEKNOLOJİSİ ALANI	9	428	98	526
Teknik Lise	BİLİŞİM TEKNOLOJİLERİ ALANI	10	10	8	18
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	17	1	18
	MAKİNA TEKNOLOJİSİ ALANI	10	12	0	12

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bilgisayar	5		5
Biyoloji	1	1	2
Coğrafya		1	1
Din Kült. ve AhI.Bil.	2		2
Elektrik	10	1	11
Elektronık/Telekomınıkas.	7	1	8
Felsefe		1	1
Fen Bilgisi/Fen ve Teknoloji	1		1
Fızık	3	2	5
Fransizca		1	1
Ingilizce	2	4	6
Kimya	2	2	4
Makine,Tesviye,Kalıp	13		13
Matbaa	5		5
Matematik	6	5	11
Metal İşleri	5		5
Mobilya ve Dekorasyon	3		3
Motor	7	1	8
Rehber Öğretmen	1		1
Tarih	1	2	3
Tekstil	3	1	4
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	8		8
	86	23	109

Annex4-10

İSTANBUL PENDİK EML

Kurum Bünyesindeki Okullar ve Öğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	52	8	60
2	Anadolu Teknik Lisesi	48	8	56
3	Endüstri Meslek Lisesi	944	197	1,141
4	Teknik Lise	129	0	129
	Total	1,173	213	1,386

Kurum Bünyesindeki Okulların Bdlümleri ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	24	4	28
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	24	4	28
Endüstri Meslek Lisesi	Elektrik	10	7	0	7
	Elektrik	11	102	0	102
	Elektronik	11	52	5	57
	Kimya	10	1	4	5
	Kimya	11	18	37	55
	Tesviye	10	6	0	6
	Tesviye	11	125	0	125
Teknik Lise	Elektrik	11	28	0	28
	Elektrik	12	25	0	25
	Makina	11	26	0	26
	Makina	12	14	0	14

Kurum Bünyesindeki Okulların Alanları ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	56	4	60
Endüstri Meslek Lisesi	ELEKTRIK-ELEKTRONIK TEKNOLOJISI ALANI	10	99	17	116
	KİMYA TEKNOLOJİSİ ALANI	10	16	42	58
	MAKİNA TEKNOLOJİSİ ALANI	10	75	0	75
Teknik Lise	ELEKTRIK-ELEKTRONIK TEKNOLOJISI ALANI	10	20	0	20
	MAKİNA TEKNOLOJİSİ ALANI	10	16	0	16

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1	1	2
Bilgisayar	2	1	3
Biyoloji	1		1
Coğrafya	1		1
Elektrik	14	1	15
Elektronık/Telekomınıkas.	8		8
Fızık	2	1	3
Ingilizce	1	1	2
Kimya	7	5	12
Makine,Tesviye,Kalıp	13		13
Matematik	1	3	4
Rehber Öğretmen	1	1	2
Tarih	2		2
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	2	1	3
	56	15	71

Annex4-11

KAHRAMANMARAŞ MERKEZ EML

Kurum Bünyesindeki Okullar ve Öğrenci Sayıları (01.11.2006)

Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	30	0	30
2	Anadolu Teknik Lisesi	128	23	151
3	Endüstri Meslek Lisesi	1,229	13	1,242
4	Teknik Lise	89	3	92
	Total	1,476	39	1,515

Kurum Bünyesindeki Okulların Bdlümleri ve Öğrenci Sayıları (01.11.2006)

Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Bilgisayar (Yazılım)	10	20	5	25
	Bilgisayar (Yazılım)	11	19	8	27
Endüstri Meslek Lisesi	Bilgisayar (Yazılım)	11	26	0	26
	Elektrik	11	119	0	119
	Elektronik	11	79	0	79
	Metal Işleri	11	37	0	37
	Mobilya ve Dekorasyon	11	27	0	27
	Motor	11	45	0	45
	Tesviye	11	43	0	43
Teknik Lise	Bilgisayar (Yazılım)	11	15	3	18
	Bilgisayarlı Numerık Kontrol (CNC)	11	11	0	11
	Elektrik	11	28	0	28

Kurum Bünyesindeki Okulların Alanları ve Öğrenci Sayıları (01.11.2006)

Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	30	0	30
Anadolu Teknik Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	10	18	4	22
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	15	0	15
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	24	6	30
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	32	0	32
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	15	0	15
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	18	2	20
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	159	2	161
	MAKİNA TEKNOLOJİSİ ALANI	10	17	0	17
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	12	1	13
Teknik Lise	BİLİŞİM TEKNOLOJİLERİ ALANI	10	20	0	20
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	15	0	15

Personel Bilgileri (01.11.2006)

Branşı	Erkek	Kız	Toplam
Beden Eğitimi	2		2
Bilgisayar	6	2	8
Biyoloji	2	2	4
Coğrafya	1	1	2
Din Kült. ve AhI.Bil.	2		2
Elektrik	19		19
Elektronık/Telekomınıkas.	9		9
Felsefe		1	1
Fen Bilgisi/Fen ve Teknoloji	1		1
Fızık	2		2
İlköğetim Matematik Öğr.		1	1
Ingilizce	1	3	4
Kimya	1	1	2
Makine Ressamlığı	3	1	4
Makine,Tesviye,Kalıp	13		13
Matematik	4		4
Metal İşleri	7		7
Mobilya ve Dekorasyon	7		7
Motor	6		6
Rehber Öğretmen	1	1	2
Resim İş/Resim/Görsel Sanatlar	1		
Tarih	3		3
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	4	2	6
Türkçe	1		1
	96	15	110

Annex4-12

KAYSERİ HÜRRİYET EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	55	3	58
2	Anadolu Teknik Lisesi	44	3	47
3	Endüstri Meslek Lisesi	862	68	930
4	Teknik Lise	100	11	111
	Total	1,061	85	1,146

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	Endüstriyel Elektronik	9	29	0	29
	Endüstriyel Mekanik	9	26	3	29
Anadolu Teknik Lisesi	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	24	0	24
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	20	3	23
Endüstri Meslek Lisesi	Boya-Apre	11	17	4	21
	Dokuma	11	34	8	42
	Elektrik	11	78	0	78
	Elektronik	11	66	5	71
	Metal Işleri	11	18	0	18
	Mobilya ve Dekorasyon	11	42	0	42
	Motor	11	50	0	50
	Tesviye	11	35	0	35
Teknik Lise	Bilgisayar (Donanım)	10	17	2	19
	Bilgisayar (Donanım)	11	18	2	20
	Bilgisayar (Donanım)	12	13	3	16
	Bilgisayar (Yazılım)	10	16	3	19
	Bilgisayar (Yazılım)	11	19	1	20
	Bilgisayar (Yazılım)	12	17	0	17

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJISI ALANI	10	13	0	13
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	15	4	19
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	53	4	57
	TEKSTİL TEKNOLOJİSİ ALANI	10	9	3	12

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bilgisayar	4		4
Biyoloji		3	3
Coğrafya	1	1	2
Din Kült. ve AhI.Bil.	2		2
Elektrik	12		12
Elektronık/Telekomınıkas.	7	2	9
Felsefe	1		1
Fızık	4		4
Ingilizce	2		2
Kimya		2	2
Makine,Tesviye,Kalıp	17		17
Matematik	5	3	8
Metal İşleri	4		4
Mobilya ve Dekorasyon	4		4
Model	2		2
Motor	11		11
Rehber Öğretmen	1		1
Tarih		2	2
Tekstil	7		7
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	3	3	6
	88	16	104

Annex4-13

KOCAELİ GEBZE EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	57	3	60
2	Anadolu Teknik Lisesi	130	56	186
3	Endüstri Meslek Lisesi	1,752	98	1,850
4	Teknik Lise	67	3	70
	Total	2,006	160	2,166

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	23	2	25
	Endüstriyel Otomasyon Teknolojileri (Elektronik)	9	5	0	5
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	15	4	19
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	9	11	0	11
	Tip Elektroniği	10	31	15	46
	Tip Elektroniği	11	16	12	28
	Tip Elektroniği	12	3	2	5
	Tip Elektroniği	9	11	6	17
Endüstri Meslek Lisesi	Bilgisayar (Yazılım)	10	11	0	11
	Bilgisayar (Yazılım)	11	46	17	63
	Elektrik	10	16	0	16
	Elektrik	11	164	5	169
	Elektrik-Elektronik Teknolojisi (MEGEP)	11	23	2	25
	Elektronik	10	22	0	22
	Elektronik	11	143	10	153
	Kalip	10	24	1	25
	Kalip	11	102	2	104
	Makine Teknolojisi (MEGEP)	11	25	2	27
	Metal Işleri	10	24	0	24
	Metal Işleri	11	126	0	126
	Mobilya ve Dekorasyon	10	6	0	6
	Mobilya ve Dekorasyon	11	63	3	66
	Tesviye	10	33	0	33
	Tesviye	11	133	1	134
Teknik Lise	Endüstriyel Elektronik	11	20	0	20
	Endüstriyel Elektronik	12	26	0	26
	Makina	12	10	0	10

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	56	4	60
Anadolu Meslek Lisesi	BİOMEDİKAL CİHAZ TEKNOLOJİLERİ ALANI	9	15	15	30
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	17	0	17
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	18	7	25
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	87	14	101
	MAKİNA TEKNOLOJİSİ ALANI	10	104	0	104
	METAL TEKNOLOJİSİ ALANI	10	43	0	43
Teknik Lise	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	11	3	14

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Bilgisayar	5	2	7
Biyoloji	2		2
Coğrafya	1		1
Din Kült. ve AhI.Bil.	2		2
Elektrik	13		13
Elektronık/Telekomınıkas.	14	1	15
Felsefe	1		1
Fızık	3	1	4
İlköğetim Matematik Öğr.	1		1
Ingilizce	1	4	5
Kimya	1	1	2
Makine,Tesviye,Kalıp	24	1	25
Matematik	6	2	8
Metal İşleri	15		15
Mobilya ve Dekorasyon	6	1	7
Rehber Öğretmen	2		2
Tarih	1	4	5
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	3	4	7
	101	21	122

Annex4-14

KONYA ADİL KARAAğAC ATL

Kurum Bünyesindeki Okullar ve Öğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	252	66	318
2	Anadolu Teknik Lisesi	177	36	213
3	Endüstri Meslek Lisesi	0	0	0
4	Teknik Lise	0	0	0
	Total	429	102	531

Kurum Bünyesindeki Okulların Bdlümleri ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	Bilgisayar (Yazılım)	10	27	15	42
	Bilgisayar (Yazılım)	11	15	5	20
	Bilgisayar (Yazılım)	9	1	2	3
	Elektrik	10	43	0	43
	Elektrik	11	23	0	23
	Elektrik	9	5	0	5
	Elektronik	10	25	0	25
	Elektronik	11	27	1	28
	Elektronik	9	4	0	4
	Kimya	10	15	27	42
	Kimya	11	4	8	12
	Kimya	9	1	4	5
Anadolu Meslek Lisesi	Endüstriyel Otomasyon Teknolojileri	10	26	1	27
	Endüstriyel Otomasyon Teknolojileri	11	23	4	27
	Endüstriyel Otomasyon Teknolojileri	12	19	0	19
	Endüstriyel Otomasyon Teknolojileri	9	3	0	3
	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	25	2	27
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	25	0	25

Kurum Bünyesindeki Okulların Alanları ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	62	4	66
Anadolu Teknik Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	9	18	11	29
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	27	0	27
	KİMYA TEKNOLOJİSİ ALANI	9	11	18	29

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bilgisayar	3		3
Biyoloji	1	1	2
Coğrafya	1		1
Din Kült. ve AhI.Bil.	1		1
Elektrik	5		5
Elektronık/Telekomınıkas.	4	1	5
Fızık	2		2
Ingilizce	4	2	6
Kimya	3	2	5
Makine,Tesviye,Kalıp	1		1
Matematik	3	1	4
Rehber Öğretmen	2		2
Tarih	2		2
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	2	1	3
	35	8	43

Annex4-15

MALATYA YUNUS EMRE EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	84	13	97
2	Anadolu Teknik Lisesi	0	0	0
3	Endüstri Meslek Lisesi	545	23	568
4	Teknik Lise	0	0	0
	Total	629	36	665

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Endüstri Meslek Lisesi	Bilgisayar (Yazılım)	11	37	2	39
	Elektrik	10	6	0	6
	Elektrik	11	72	0	72
	Elektronik	10	7	0	7
	Elektronik	11	47	3	50
	Matbaa	11	26	0	26
	Metal Işleri	10	5	0	5
	Metal Işleri	11	5	0	5
	Mobilya ve Dekorasyon	10	3	0	3
	Mobilya ve Dekorasyon	11	16	0	16
	Yapı Ressamlığı	10	1	0	1
	Yapı Ressamlığı	11	4	2	6

10					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	BİLİŞİM TEKNOLOJİLERİ ALANI	10	15	5	20
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	24	5	29
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	45	3	48
Anadolu Teknik Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	8	0	8
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	30	3	33
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	41	0	41
	MATBAA ALANI	10	7	4	11

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bilgisayar	4	1	5
Biyoloji	2		2
Coğrafya		1	1
Din Kült. ve AhI.Bil.	1		1
Elektrik	6		6
Elektronık/Telekomınıkas.	6		6
Felsefe		1	1
Fızık	1	1	2
Ingilizce	1		1
Kimya	1		1
Makine Ressamlığı	1		1
Makine,Tesviye,Kalıp	7		7
Matbaa	3		3
Matematik	3	2	5
Metal İşleri	2		2
Mobilya ve Dekorasyon	2		2
Rehber Öğretmen	2		2
Tarih	1	1	2
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	3	1	4
Yapi/Yapi Ressamlığı/Harita ve Kadastro	3		3
	50	8	58

Annex4-16

MERSİN TARSUS EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	54	4	58
2	Anadolu Teknik Lisesi	169	18	187
3	Endüstri Meslek Lisesi	1,272	9	1,281
4	Teknik Lise	73	0	73
	Total	1,568	31	1,599

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Elektrik	10	49	0	49
	Elektrik	11	23	0	23
	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	28	2	30
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	18	2	20
	Kimya	10	7	7	14
Endüstri Meslek Lisesi	Bilgisayar (Donanım)	11	22	0	22
	Elektrik	10	8	0	8
	Elektrik	11	85	0	85
	Elektronik	11	49	0	49
	Kimya	11	32	6	38
	Makine Teknolojisi (MEGEP)	11	56	0	56
	Metal Işleri	11	43	0	43
	Metal Teknolojisi (MEGEP)	11	38	0	38
	Mobilya ve Dekorasyon	11	20	0	20
	Tesviye	11	75	0	75
	Yapı	11	5	0	5
	Yapı Ressamlığı	11	12	2	14
Teknik Lise	Elektrik	10	22	0	22
	Elektrik	11	12	0	12
	Elektrik	12	13	0	13
	Makina	10	18	0	18
	Makina	11	1	0	1
	Makina	12	7	0	7

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	54	4	58
Anadolu Teknik Lisesi	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	31	0	31
	KİMYA TEKNOLOJİSİ ALANI	9	14	7	21
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	15	0	15
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	14	0	14
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	50	0	50
	KİMYA TEKNOLOJİSİ ALANI	10	18	0	18
	MAKİNA TEKNOLOJİSİ ALANI	10	43	0	43
	METAL TEKNOLOJİSİ ALANI	10	41	0	41

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1	1	2
Bilgisayar	1		1
Biyoloji	3	1	4
Coğrafya		1	1
Din Kült. ve AhI.Bil.	1		1
Elektrik	14		14
Elektronık/Telekomınıkas.	5	1	6
Felsefe	1	1	2
Fızık	4	2	6
Ingilizce	1	3	4
Kimya	10	3	13
Makine,Tesviye,Kalıp	22	1	23
Matematik	4	2	6
Metal İşleri	15		15
Mobilya ve Dekorasyon	6		6
Tarih	2	1	3
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	5	3	8
Yapi/Yapi Ressamlığı/Harita ve Kadastro	10	1	11
	105	21	126

Annex4-17

ORDU MERKEZ EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	153	18	171
2	Anadolu Teknik Lisesi	120	7	127
3	Endüstri Meslek Lisesi	1,252	17	1,269
4	Teknik Lise	168	9	177
	Total	1,693	51	1,744

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	Bilgisayar (Yazılım)	10	23	1	24
	Bilgisayar (Yazılım)	11	19	8	27
Anadolu Teknik Lisesi	Bilgisayar (Yazılım)	10	29	1	30
	Bilgisayar (Yazılım)	11	25	4	29
	Bilgisayar (Yazılım)	12	11	0	11
Endüstri Meslek Lisesi	Bilgisayar (Donanım)	11	14	0	14
	Elektrik	11	55	0	55
	Elektronik	11	43	3	46
	Metal Işleri	11	65	0	65
	Mobilya ve Dekorasyon	11	72	0	72
	Motor	11	36	0	36
	Tesisat Teknolojisi (Isıtma-Sıhhi Tesisat)	11	35	0	35
	Tesviye	11	67	0	67
	Yapı	11	37	0	37
	Yapı Ressamlığı	11	33	3	36
Teknik Lise	Bilgisayar (Yazılım)	11	26	0	26
	Bilgisayar (Yazılım)	12	10	2	12
	Elektrik	11	13	0	13
	Elektrik	12	9	0	9
	Elektronik	11	16	0	16
	Elektronik	12	16	0	16
	Makina	11	14	0	14

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	BİLİŞİM TEKNOLOJİLERİ ALANI	10	23	6	29
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	28	3	31
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	60	0	60
Anadolu Teknik Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	10	25	0	25
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	30	2	32
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	33	0	33
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	20	0	20
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	63	2	65
	İNŞAAT TEKNOLOJİSİ ALANI	10	20	2	22
	MAKİNA TEKNOLOJİSİ ALANI	10	40	0	40
	METAL TEKNOLOJİSİ ALANI	10	12	0	12
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	21	0	21
	TESİSAT TEKNOLOJİSİ VE İKLİMLENDİRME ALANI	10	23	0	23
Teknik Lise	BİLİŞİM TEKNOLOJİLERİ ALANI	10	21	3	24
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	43	4	47

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	2		2
Bilgisayar	9	2	11
Biyoloji	3		3
Coğrafya		2	2
Din Kült. ve AhI.Bil.	3		3
Elektrik	8		8
Elektronık/Telekomınıkas.	11	1	12
Fen Bilgisi/Fen ve Teknoloji	1		1
Fızık	3	2	5
Ingilizce		5	5
Kimya	3	1	4
Makine Ressamlığı		1	1
Makine,Tesviye,Kalıp	11		11
Matematik	6	3	9
Metal İşleri	10		10
Mobilya ve Dekorasyon	7		7
Motor	6		6
Rehber Öğretmen	1		1
Tarih	3	1	4
Tesisat Teknolojisi	4		4
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	5	2	7
Türkçe	1		1
Yapi/Yapi Ressamlığı/Harita ve Kadastro	5	1	6
	102	21	123

Annex4-18

ŞANLIURFA MERKEZ EML

Kurum Bünyesindeki Okullar ve Öğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	21	2	23
2	Anadolu Teknik Lisesi	52	12	64
3	Endüstri Meslek Lisesi	915	35	950
4	Teknik Lise	58	0	58
	Total	1,046	49	1,095

Kurum Bünyesindeki Okulların Bdlümleri ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Bilgisayar (Yazılım)	10	12	5	17
	Bilgisayar (Yazılım)	11	13	2	15
Endüstri Meslek Lisesi	Bilgisayar (Yazılım)	11	32	2	34
	Elektrik	11	58	0	58
	Elektronik	11	25	3	28
	Metal Işleri	11	22	0	22
	Mobilya ve Dekorasyon	11	27	0	27
	Motor	11	32	0	32
	Soğutma ve İklimlemdirme	11	30	0	30
	Tesviye	11	26	0	26
	Yapı	11	25	0	25
	Yapı Ressamlığı	11	24	3	27
Teknik Lise	Elektrik	11	17	0	17
	Elektrik	12	11	0	11

Kurum Bünyesindeki Okulların Alanları ve Öğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	22	2	24
Anadolu Teknik Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	10	10	1	11
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	18	4	22
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	26	0	26
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	31	6	37
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	76	2	78
	İNŞAAT TEKNOLOJİSİ ALANI	10	39	1	40
	MAKİNA TEKNOLOJİSİ ALANI	10	18	0	18
	METAL TEKNOLOJİSİ ALANI	10	7	0	7
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	21	0	21
	TESİSAT TEKNOLOJİSİ VE İKLİMLENDİRME ALANI	10	29	0	29
	AHŞAP TEKNOLOJİSİ ALANI	9	44	0	44
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	39	3	42
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	87	3	90
	İNŞAAT TEKNOLOJİSİ ALANI	9	40	5	45
	MAKİNA TEKNOLOJİSİ ALANI	9	38	2	40
	METAL TEKNOLOJİSİ ALANI	9	39	2	41
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	9	38	0	38
	TESİSAT TEKNOLOJİSİ VE İKLİMLENDİRME ALANI	9	40	3	43
Teknik Lise	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	30	0	30

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	2		2
Bilgisayar	6		6
Biyoloji	1	2	3
Coğrafya	1		1
Din Kült. ve AhI.Bil.	1	1	2
Elektrik	11		11
Elektronık/Telekomınıkas.	4		4
Felsefe	1		1
Fızık	1	1	2
Ingilizce	2	1	3
Kimya	2		2
Makine,Tesviye,Kalıp	4		4
Matematik	4	2	6
Metal İşleri	3		3
Mobilya ve Dekorasyon	6		6
Motor	4		4
Müzik		1	1
Rehber Öğretmen	1	1	2
Sosyal Bilgiler	1	1	2
Tarih	1		1
Tesisat Teknolojisi	2		2
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	1	3	4
Yapi/Yapi Ressamlığı/Harita ve Kadastro	8	1	9
	67	14	81

Annex4-19

TEKİRDAğ ÇORLU MRÜŞTÜ UZEL EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	128	2	130
2	Anadolu Teknik Lisesi	73	1	74
3	Endüstri Meslek Lisesi	1,460	18	1,478
4	Teknik Lise	139	0	139
	Total	1,800	21	1,821

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	Elektrik	10	13	0	13
Anadolu Teknik Lisesi	Elektrik	10	19	1	20
Endüstri Meslek Lisesi	Bilgisayar (Donanım)	11	31	2	33
	Elektrik	11	68	0	68
	Elektronik	11	55	1	56
	Metal Işleri	10	11	0	11
	Metal Işleri	11	75	0	75
	Mobilya ve Dekorasyon	10	11	0	11
	Mobilya ve Dekorasyon	11	46	0	46
	Motor	10	9	0	9
	Motor	11	67	0	67
	Tesisat Teknolojisi (Isıtma-Doğalgaz)	11	33	0	33
	Tesviye	10	10	0	10
	Tesviye	11	90	0	90
	Yapı	10	9	0	9
	Yapı	11	35	3	38
Teknik Lise	Elektrik	11	26	0	26
	Elektrik	12	12	0	12
	Makina	11	31	0	31
	Makina	12	21	0	21

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	21	0	21
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	34	0	34
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	58	2	60
Anadolu Teknik Lisesi	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	24	0	24
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	9	34	0	34
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	18	0	18
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	24	0	24
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	60	2	62
	İNŞAAT TEKNOLOJİSİ ALANI	10	16	0	16
	MAKİNA TEKNOLOJİSİ ALANI	10	30	0	30
	METAL TEKNOLOJİSİ ALANI	10	31	0	31
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	29	1	30
Teknik Lise	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	25	0	25
	MAKİNA TEKNOLOJİSİ ALANI	10	24	0	24

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bilgisayar	3	2	5
Biyoloji	1	1	2
Coğrafya		1	1
Din Kült. ve AhI.Bil.	1		1
Elektrik	13		13
Elektronık/Telekomınıkas.	5	1	6
Felsefe	1		1
Fızık	2		2
İlköğetim Matematik Öğr.		1	1
Ingilizce		5	5
Kimya	2	1	3
Makine,Tesviye,Kalıp	11		11
Matematik	2	5	7
Metal İşleri	11		11
Mobilya ve Dekorasyon	3		3
Motor	10		10
Rehber Öğretmen		1	1
Tarih		3	3
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	1	6	7
Yapi/Yapi Ressamlığı/Harita ve Kadastro	5	1	6
	72	28	100

Annex4-20

VAN MERKEZ EML

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	27	0	27
2	Anadolu Teknik Lisesi	78	13	91
3	Endüstri Meslek Lisesi	945	22	967
4	Teknik Lise	23	3	26
	Total	1,073	38	1,111

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	Endüstriyel Elektronik	9	12	0	12

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	27	0	27
Anadolu Teknik Lisesi	BİLİŞİM TEKNOLOJİLERİ ALANI	10	37	8	45
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	10	18	0	18
	BİLİŞİM TEKNOLOJİLERİ ALANI	9	22	5	27
	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	27	0	27
Endüstri Meslek Lisesi	AHŞAP TEKNOLOJİSİ ALANI	10	20	0	20
	BİLİŞİM TEKNOLOJİLERİ ALANI	10	27	6	33
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	10	26	0	26
	METAL TEKNOLOJİSİ ALANI	10	20	0	20
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	10	16	0	16
	AHŞAP TEKNOLOJİSİ ALANI	11	50	0	50
	BİLİŞİM TEKNOLOJİLERİ ALANI	11	85	2	87
	ELEKTRİK-ELEKTRONİK TEKNOLOJİSİ ALANI	11	80	5	85
	METAL TEKNOLOJİSİ ALANI	11	45	0	45
	MOTORLU ARAÇLAR TEKNOLOJİSİ ALANI	11	78	0	78
	TESİSAT TEKNOLOJİSİ VE İKLİMLENDİRME ALANI	11	40	0	40
Teknik Lise	BİLİŞİM TEKNOLOJİLERİ ALANI	10	17	3	20
	BİLİŞİM TEKNOLOJİLERİ ALANI	12	6	0	6

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bilgisayar	6		6
Biyoloji	1		1
Coğrafya	1		1
Elektrik	5		5
Elektronık/Telekomınıkas.	8	1	9
Felsefe	1		1
Fızık	1	2	3
Ingilizce	1	2	3
Kimya	1		1
Makine,Tesviye,Kalıp	1		1
Matematik	4		4
Metal İşleri	5		5
Mobilya ve Dekorasyon	3		3
Motor	7		7
Tarih	1	1	2
Tesisat Teknolojisi	2		2
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	2	2	4
	51	8	59

Annex4-21

Izmir Mazhar Zorlu ATL (for reference)

Kurum Bünyesindeki Okullar ve Oğrenci Sayıları (01.11.2006)				
Sıra	Kurum Türü	Erkek	Kız	Toplam
1	Anadolu Meslek Lisesi (ErkekTeknik)	59	1	60
2	Anadolu Teknik Lisesi	181	2	183
3	Endüstri Meslek Lisesi	241	8	249
4	Teknik Lise	0	0	0
	Total	481	11	492

Kurum Bünyesindeki Okulların Bdlümleri ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Bölüm	Sınıf	Erkek	Kız	Toplam
Anadolu Teknik Lisesi	Endüstriyel Otomasyon Teknolojileri (Elektronik)	10	48	0	48
	Endüstriyel Otomasyon Teknolojileri (Elektronik)	11	34	0	34
	Endüstriyel Otomasyon Teknolojileri (Elektronik)	12	9	0	9
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	10	50	0	50
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	11	26	1	27
	Endüstriyel Otomasyon Teknolojileri (Mekanik)	12	14	1	15
Endüstri Meslek Lisesi	Plastik İşleme	11	78	2	80

Kurum Bünyesindeki Okulların Alanları ve Oğrenci Sayıları (01.11.2006)					
Kurum Türü	Alan	Sınıf	Erkek	Kız	Toplam
Anadolu Meslek Lisesi (ErkekTeknik)	ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI	9	59	1	60
Endüstri Meslek Lisesi	PLASTİK TEKNOLOJİSİ ALANI	10	43	1	44
	PLASTİK TEKNOLOJİSİ ALANI	11	27	3	30
	PLASTİK TEKNOLOJİSİ ALANI	9	93	2	95

Personel Bilgileri (01.11.2006)			
Branşı	Erkek	Kız	Toplam
Beden Eğitimi	1		1
Bilgisayar	5	1	6
Biyoloji		2	2
Bes/Gıda Tek.Ev Y.ve Bes.		1	1
Elektrik	4		4
Elektronık/Telekomınıkas.	2	1	3
Felsefe		1	1
Fızık	1		1
Ingilizce		4	4
Kimya	1	1	2
Makine Ressamlığı	1		1
Makine,Tesviye,Kalıp	12	1	13
Matematik		2	2
Rehber Öğretmen		2	2
Tarih	1	1	2
Türk Dili ve Edebiyati/Dil ve Anlatım/Türk Edebiyatı	1	1	2
	29	18	47

Annex5 Questionnaire Survey for First Group of the Expansion Schools

No	Questions	Answers										
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI
A	**Move of Graduates**											
1	How many % of graduates from all departments of your school have entered employment directly in average of recent years?											
	To enter employment	8%	35%		40%	60%	70%	68%	48%	22%	23%	10%
	To proceed to higher education	17%	40%		50%	40%	30%	30%	42%	44%	3%	20%
2	Where have graduates from all departments of your school found employment in average of recent years?											
	Same city	7%	94%		80%	95%	50%	70%	62%	50%	15%	80%
	Same province		1%		15%	4%	45%	25%	83%	20%	5%	10%
	Other provinces	1%	5%		5%	1%	5%	5%	17%	30%	3%	10%
B	**Assessment on Teacher Training at TTC**											
3	Criteria to select teachers for the training at TTC (Multiple answers allowed)	A,B,C,D	A,D	A,D,E	A,B,C,D	A,D,E	A,D	A,C,D,E	A,E	A,B,E	A,D,E	A,D
	[A] they have appropriate academic backgrounds											
	[B] they have appropriate expertise											
	[C] they have enough experience in teaching industrial automation fields											
	[D] they have worked at the related departments											
	[E] others											
4	Please raise comments of teachers who have received the training at TTC;											
	The course training for **Grade 10** was helpful for conducting or preparing for education and training of industrial automation technologies in your school?	B	A	B	B	A	B	A	B	A	C	A
	[A] Sufficient											
	[B] Fair											
	[C] Not sufficient											
	If not sufficient, in which aspects it was not sufficient (Multiple answers allowed)	D,E	E	B,E	D,E		B,E		A,C,D,E		A,B,E	
	[A] Training Materials											
	[B] Lecture											
	[C] Laboratories											
	[D] Length of training term											
	[E] Other											

Answers to Others:

1. They are interested in lessons and have ambition to learn.
2. It is strongly required to choose person that is ambitious to learn.
3. Staff member who can work overtime,like researching,be reformist, active, do group work and be available for inland and also international cases.
4. Have willing
5. Aptness to group work and knowledge about foreign language.
6. The teachers who are following the developments about their branches closely and eager to assign in various projects were selected.

Answers to Others:

1. It should be provided that the course teachers make preparations before lessons.
2. Training time is longer than normally required and had different effects on teachers. Training on the same branch as own is thougt to be unnecessary by teachers.
3. The subjects of lessons should be levelled according to the branch of teachers who are taking these lessons. If possible, appropriate lessons should be selected in local service training.
4. The training devices in schools are different from each other.
5. Too much information is squeezed into limited training time.
6. Lack of documents.
7. a)There is not equivalence between two courses which are assembled in Konya and Izmir.
b)The time which were decided for lessons were insufficient. For example The lesson named as Microdetector is normally taken 1 academic year but in this program it took just only 30 hours.(All lessons were approximately taken short time and insufficient.

The course training for **Grade 11** was helpful for conducting or preparing for education and training of industrial automation technologies in your school?

[A] Sufficient

[B] Fair

[C] Not sufficient

B	A	B	B	B	B	A	B	A	B	A

If not sufficient, in which aspects it was not sufficient (Multiple answers allowed)

[A] Training Materials

[B] Lecture

[C] Laboratories

[D] Length of training term

[E] Other

D,E	E	B,D,E	A,B,E	B,D	B,C		A,C,E		D,E	

Answers to Others:

1.It should be provided to use the course time effectively and the duration of lessons should be made acceptable according to requirements.

2.Training time is longer than normally required and had different effects on teachers. Training on the same branch as own is thougt to be unnecessary by teachers. For some of the lessons the duration of lessons should be lengthen more.

3. The subjects of lessons should be levelled according to the branch of teachers who are taking these lessons. If possible, appropriate lessons should be selected in local service training.

4. The training devices in schools are different from each other

5. Lack of documents.

6. For consolidating and renewing knowledge to take course for a month is more suitable than to take course for 3 months.(for example 2 term in a year)

5 Do the trainees wish to take other training courses which they are not in charge? (For example, teachers who are in charge of machinery subjects wish to take a training course for electronic subjects?)

[A] Yes, they wish to take various courses very much.

[B] No, they do not wish usually.

[C] No, they do not need to take different courses.

B	A	B	B	B	A	A	A	A	C	A

6 In which fields do you think the teachers need to be trained especially? (Multiple answers allowed)

[A] Technical knowledge on the subjects

[B] Teaching methods on the subjects

[C] Others (please state the fields specifically that training are needed)

A	A	A,C	A,B	B	A	A	A,C	A,B,C	A,B,C	A

Answers to Others:

1. It is better to give an education which is based on practical learning. CNC training is needed. CIM Laboratory training is needed.

2. Foreign language training

3. The process in carrying out the project and its designation.

4. The application can be more fruitful if made a development project work about subjects.

C Management of Industrial Automation Department

7 Do Grade 10 classes of the Industrial Automation Department go well? (Only for schools in the first group)

[A] good

[B] have a few troubles

[C] have many troubles

A	B	B	A	B	B	A	B	B	B	B

If you have troubles, in which aspects you have? (Multiple answers allowed)

[A] Preparation of Training Materials

[B] Technical knowledge

[C] Laboratories

[D] Other

	D	C,D		A	D	D	C	D	A,D	

Answers to Others:

1. Owing to examination system the quality os students is under level and it makes problems in education system.

2. There arent any devices and tables to be used in laboratories

3. a) The workbenchs which are used in basic mechanic workshops have completely not arrived yet. We are taking classes in Machine Technologies Field to finishing workshop. In the second semester, we are in a difficult position because we will use lathe and milling machine workshops shared with classes. The students take technical classes in their own field classroom and then they take practice lessons in workshops.
b) In basic industrial applications, there are not any convenient desks in laboratories, so the lessons cannot take place effectively. we are using the desks in school which are out of use.
c) Workshops for 11 and 12 Grade were set up but 10 Grade has no workshops set up yet.

4. Despite the fact that our school has 10. level but isnt included to first installation group the education is continuing.

5. Application is not touched on deeply on modules.

6. Because of the fact that the contents of models focus on theoretic information and there are a few applications on modules, the students take less attention to lessons.

8 Are outcomes from the training shared among other teachers in Industrial Automation Department?

[A] Frequently

[B] A few times

[C] None

If not, please state reason why the outcomes are not shared with other teachers

A	A	A	A	B	A		A	A	A	A

Reasons outtcomes are not shared:

1. Teachers who are responsible for this training area have too many lessons and it is difficult to find an appropriate time to work together.
2. Lesson materials in school where the training take place, and lesson materials in 10 schools which are opened lately are different from each others. For example, PLC training is given with MITSUBISHI board of PLC but the PLC board which were sent by MONE is NAIS. In PIC training, 16F84 is used but MONE sent PIC (training) set.

9 The skill training at firms in Industrial Automation Department:

Industrial characteristic in your region:

1. Textile, car, chemical, food and portion production are the areas which automation is used.

2. The characteristics of industry in our region shows variety. There are two organized industry zones. The necessary areas in industry: programmer, electronics, network expert, PLC, CNC, CAD/CAM, robotic systems

3. Now there is only 10th Grade. So we do not give still training lessons. In the next term we will inquiry the necessary study about this.

4. In our region, there is a huge amount of industrial estate, and there are also firms of small and medium scale. As a school, we are in touch with these factories, and we are planning an internship program in these factories for our students to review the lessons which they are studying in the school.

5. There are totally enough industrial estate, so we contact to firms and send our students in an internship program. The industry is mainly based on production of automation, machine, electrics, electronics, car and plastic iniection.

6. Based on textile (string, weaving), home textile, furnishing and food sectors

7. Skill training in firms is carried out in firms which has small and medium scale production mostly in car and food industry. Manual and semi-automation are the two ways which are used in the production process. Many of these firms were first built as a family company and then changed to corporation company.

8. a) We are planning to send our students to firms in which they can pracitice their skill training
b) We are planning to make additional training about subjects which are insufficient as result of controls in accademic year.
c) In our region glass, textile, working machines, food, cement industries and various companies with small quantities are available.

9. In our region, amount of industrial organizations and "completion" of inductrial estate is likely to increase. As a result, day by day, number of the firms in which our students in Industrial Automation Technologies can take skill training lessons and work after graduating from school is increasing as well. In our region, sugar, cement, food, plastic, textile, and feeding industry factories are

Content of skill training at firms:

1. Mechatronics and industrial electronics

2. Programming, electronics, network, PLC, CNC, CAD/CAM, robotic systems

3. Generally we are thinking on the factories which have production band. And also we are planning to send students to firms of small and medium scale in which they can practice the subject they learn in lessons.

4. Training of the production which is provided by industrial automation is given as content of subjects

5. In the first year, training is based on the management methods of a vocational firm, the analysis of relationships in a firm and the form of flaw of the work. And in other term, training is based mainly on vocational observation and areas that students can practice this deeply.

6. According to needs and requirements of our region, contents of the training are mostly based on the structure of the automation systems which students can use in firms of small scale.

10	Does your school have any contacts with the industry sector in your region such as Chamber of Commerce and Industry? [A] Frequently [B] A few times [C] None	A	B	B	A	B	B	A	A	A	A	B
11	Does your school conduct career guidance to students? [A] Frequently [B] A few times [C] None	B	A	A	A	B	A	A	A	B	A	B

Annex 6 Self Assessment on Knowledge and Skills for Teaching

(1) Overall Total, 56 Teachers

	1	2	3	4	5	6	7	8	
Self-assessed abilities for teaching IAT Branch Courses Total points: Maximum=168, Minimum=0	I have academic backgrounds appropriate for teaching the subject course	I have reviewed all the MEGEP modules for the subject course	I have knowledge on the subject course sufficient to teach in the secondary education	I am skilled to develop teaching materials that support lecture of the subject course	I can lecture the subject course in a professional manner, using proven and agreed-on teaching methods and skills.	I have a thorough knowledge of the functional operation of equipment that is generally used in practices for the subject course	I can develop practices in laboratories that best support teaching objectives	I can prepare and develop evaluation process for student's performance in the subject course	Average: Max=3, Min=0
MECHANISMS	87	65	102	74	88	89	80	94	1.5
BASIC COMPUTER NETWORKS	92	73	102	71	75	79	80	89	1.5
MODELING ON COMPUTERS	112	88	127	101	111	114	103	106	1.9
PNEUMATIC AND HYDRAULIC SYSTEMS	117	89	131	110	116	120	113	117	2.0
COMPUTERIZED CONTROL	86	52	94	68	79	86	75	84	1.4
SEQUENTIAL CONTROL	97	69	105	80	94	90	87	94	1.6
PLANT AUTOMATION	70	37	76	62	68	71	67	73	1.2
AUTOMATIC PRODUCTION	74	35	85	66	69	76	71	85	1.3
SCADA SYSTEMS	23	10	30	26	36	30	30	33	0.5
CIRCUIT ANALYSIS	95	67	99	91	91	94	87	90	1.6
INDUSTRIAL MANAGEMENT	62	32	65	58	60	63	59	57	1.0
BASIC PROGRAMMING	107	84	110	91	100	105	97	99	1.8
BASIC COMPUTER NETWORKS & SERVER SERVICES	90	61	91	76	90	85	84	86	1.5
COMPUTERIZED CIRCUIT DESIGNS	107	72	103	95	98	100	91	100	1.7
SENSORS & SIGNAL RECORDING	92	58	97	76	84	85	80	87	1.5
MICRO DETECTOR APPLICATIONS	101	76	104	86	92	97	87	97	1.7
INTERNET PROGRAMMING AND SECURITY	64	40	73	53	62	65	62	73	1.1
INDUSTRIAL SYSTEMS	81	39	76	60	68	67	66	78	1.2
INSPECTION SYSTEMS	45	22	49	41	46	50	46	46	0.8
NUMERICAL SIGNALING SYSTEM	53	28	55	45	51	52	49	53	0.9

Subjects to be trained in Grade 11 at Izmir AML
Subjects to be trained in Grade 12 at Izmir AML
Not listed in subjects for Grade 11 and 12 of Izmir AML
(Basic Programing is planned to transfer to Grade 10 at Izmir AML)

(2) Machinery, 19 Teachers

Self-assessed abilities for teaching IAT Branch Courses Total points: Maximum=57, Minimum=0	1 I have academic backgrounds appropriate for teaching the subject course	2 I have reviewed all the MEGEP modules for the subject course	3 I have knowledge on the subject course sufficient to teach in the secondary education	4 I am skilled to develop teaching materials that support lecture of the subject course	5 I can lecture the subject course in a professional manner, using proven and agreed-on teaching methods and skills.	6 I have a thorough knowledge of the functional operation of equipment that is generally used in practices for the subject course	7 I can develop practices in laboratories that best support teaching objectives	8 I can prepare and develop evaluation process for student's performance in the subject course	Average: Max=3, Min=0
MECHANISMS	44	24	51	43	48	48	40	44	2.3
BASIC COMPUTER NETWORKS	19	20	22	15	11	15	15	15	0.9
MODELING ON COMPUTERS	46	33	48	41	45	46	41	38	2.2
PNEUMATIC AND HYDRAULIC SYSTEMS	48	38	53	47	48	50	44	45	2.5
COMPUTERIZED CONTROL	17	13	21	15	18	20	16	18	0.9
SEQUENTIAL CONTROL	28	21	30	26	27	28	22	24	1.4
PLANT AUTOMATION	29	15	29	26	26	28	26	25	1.3
AUTOMATIC PRODUCTION	34	17	34	30	29	33	30	33	1.6
SCADA SYSTEMS	5	1	4	4	6	6	4	5	0.2
CIRCUIT ANALYSIS	10	12	12	12	12	13	11	11	0.6
INDUSTRIAL MANAGEMENT	15	9	15	14	14	17	15	13	0.7
BASIC PROGRAMMING	22	19	22	19	20	21	18	18	1.0
BASIC COMPUTER NETWORKS & SERVER SERVICES	21	15	20	17	18	18	17	16	0.9
COMPUTERIZED CIRCUIT DESIGNS	15	11	10	12	10	12	9	14	0.6
SENSORS & SIGNAL RECORDING	17	13	16	15	15	14	13	15	0.8
MICRO DETECTOR APPLICATIONS	13	9	13	9	11	10	8	12	0.6
INTERNET PROGRAMMING AND SECURITY	15	10	13	10	12	12	10	13	0.6
INDUSTRIAL SYSTEMS	19	9	18	14	15	15	13	18	0.8
INSPECTION SYSTEMS	8	5	9	8	8	9	8	8	0.4
NUMERICAL SIGNALING SYSTEM	11	5	11	9	10	8	10	11	0.5

(3) Electronics and Telecommunications, 17 Teachers

	1	2	3	4	5	6	7	8	
Self-assessed abilities for teaching IAT Branch Courses Total points: Maximum=51, Minimum=0	I have academic backgrounds appropriate for teaching the subject course	I have reviewed all the MEGEP modules for the subject course	I have knowledge on the subject course sufficient to teach in the secondary education	I am skilled to develop teaching materials that support lecture of the subject course	I can lecture the subject course in a professional manner, using proven and agreed-on teaching methods and skills.	I have a thorough knowledge of the functional operation of equipment that is generally used in practices for the subject course	I can develop practices in laboratories that best support teaching objectives	I can prepare and develop evaluation process for student's performance in the subject course	Average: Max=3, Min=0
MECHANISMS	22	17	25	16	20	21	21	20	1.2
BASIC COMPUTER NETWORKS	31	25	35	26	27	26	28	32	1.7
MODELING ON COMPUTERS	30	23	34	27	28	31	27	32	1.7
PNEUMATIC AND HYDRAULIC SYSTEMS	31	22	36	27	32	36	34	37	1.9
COMPUTERIZED CONTROL	30	19	35	23	26	29	27	32	1.6
SEQUENTIAL CONTROL	34	23	36	24	29	30	30	33	1.8
PLANT AUTOMATION	21	12	25	19	22	24	22	28	1.3
AUTOMATIC PRODUCTION	21	11	27	18	21	23	20	27	1.2
SCADA SYSTEMS	8	5	12	9	15	12	10	13	0.6
CIRCUIT ANALYSIS	40	24	42	34	36	38	30	35	2.1
INDUSTRIAL MANAGEMENT	24	11	25	23	24	25	21	23	1.3
BASIC PROGRAMMING	36	28	38	27	32	34	32	33	1.9
BASIC COMPUTER NETWORKS & SERVER SERVICES	30	23	30	24	31	29	28	31	1.7
COMPUTERIZED CIRCUIT DESIGNS	45	27	43	37	42	40	38	41	2.3
SENSORS & SIGNAL RECORDING	36	20	39	26	32	33	29	34	1.8
MICRO DETECTOR APPLICATIONS	41	32	42	35	38	41	36	40	2.2
INTERNET PROGRAMMING AND SECURITY	21	15	29	19	22	25	22	28	1.3
INDUSTRIAL SYSTEMS	30	17	32	23	29	28	28	30	1.6
INSPECTION SYSTEMS	20	8	22	16	19	22	20	17	1.1
NUMERICAL SIGNALING SYSTEM	23	12	26	19	22	25	21	22	1.3

(4) Electrics, 13 Teachers

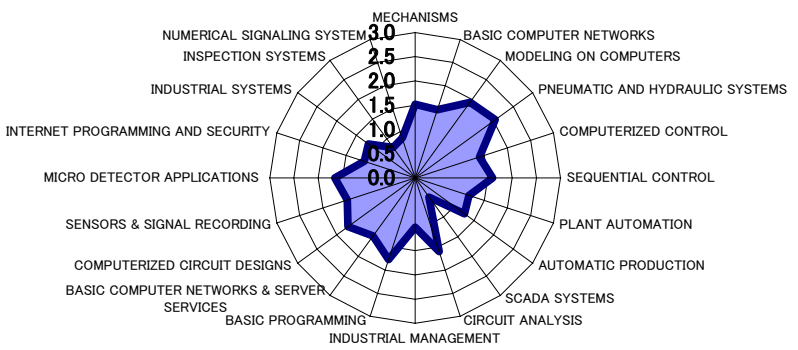
Self-assessed abilities for teaching IAT Branch Courses Total points: Maximum=39, Minimum=0	1 I have academic backgrounds appropriate for teaching the subject course	2 I have reviewed all the MEGEP modules for the subject course	3 I have knowledge on the subject course sufficient to teach in the secondary education	4 I am skilled to develop teaching materials that support lecture of the subject course	5 I can lecture the subject course in a professional manner, using proven and agreed-on teaching methods and skills.	6 I have a thorough knowledge of the functional operation of equipment that is generally used in practices for the subject course	7 I can develop practices in laboratories that best support teaching objectives	8 I can prepare and develop evaluation process for student's performance in the subject course	Average: Max=3, Min=0
MECHANISMS	16	17	20	11	13	14	15	24	1.3
BASIC COMPUTER NETWORKS	22	15	24	15	18	20	20	24	1.5
MODELING ON COMPUTERS	25	22	28	23	23	25	23	24	1.9
PNEUMATIC AND HYDRAULIC SYSTEMS	30	25	33	29	27	28	29	29	2.2
COMPUTERIZED CONTROL	22	12	21	17	20	22	19	21	1.5
SEQUENTIAL CONTROL	24	17	25	21	25	23	24	27	1.8
PLANT AUTOMATION	14	9	15	13	14	15	14	15	1.0
AUTOMATIC PRODUCTION	12	5	17	12	13	13	15	17	1.0
SCADA SYSTEMS	8	4	11	11	12	10	13	12	0.8
CIRCUIT ANALYSIS	32	22	31	32	30	32	33	32	2.3
INDUSTRIAL MANAGEMENT	17	9	16	15	14	15	16	16	1.1
BASIC PROGRAMMING	28	22	29	26	27	29	27	28	2.1
BASIC COMPUTER NETWORKS & SERVER SERVICES	20	12	21	18	20	19	20	21	1.5
COMPUTERIZED CIRCUIT DESIGNS	28	23	29	30	28	29	28	29	2.2
SENSORS & SIGNAL RECORDING	25	16	27	24	24	25	26	26	1.9
MICRO DETECTOR APPLICATIONS	29	21	30	26	25	29	28	29	2.1
INTERNET PROGRAMMING AND SECURITY	13	7	14	11	12	14	15	17	1.0
INDUSTRIAL SYSTEMS	23	11	19	18	17	17	18	21	1.4
INSPECTION SYSTEMS	13	7	12	12	11	12	11	14	0.9
NUMERICAL SIGNALING SYSTEM	11	4	11	11	11	12	11	13	0.8

(5) Computer, 6 Teachers

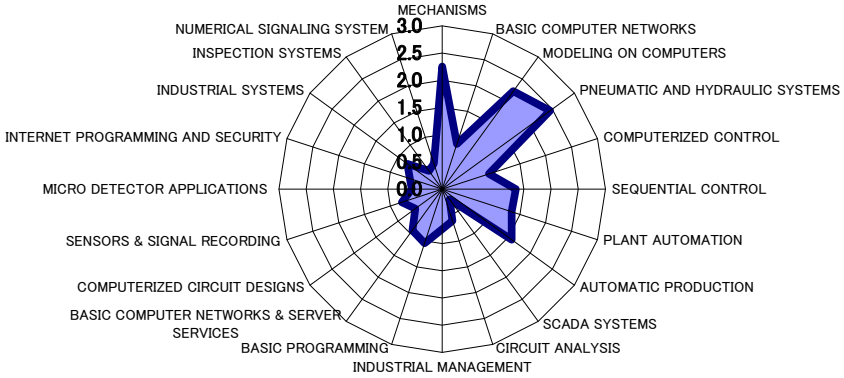
Self-assessed abilities for teaching IAT Branch Courses Total points: Maximum=18, Minimum=0	1 I have academic backgrounds appropriate for teaching the subject course	2 I have reviewed all the MEGEP modules for the subject course	3 I have knowledge on the subject course sufficient to teach in the secondary education	4 I am skilled to develop teaching materials that support lecture of the subject course	5 I can lecture the subject course in a professional manner, using proven and agreed-on teaching methods and skills.	6 I have a thorough knowledge of the functional operation of equipment that is generally used in practices for the subject course	7 I can develop practices in laboratories that best support teaching objectives	8 I can prepare and develop evaluation process for student's performance in the subject course	Average: Max=3, Min=0
MECHANISMS	5	6	5	4	6	5	4	5	0.8
BASIC COMPUTER NETWORKS	17	12	18	13	16	16	15	16	2.6
MODELING ON COMPUTERS	9	9	14	8	12	10	10	10	1.7
PNEUMATIC AND HYDRAULIC SYSTEMS	6	3	7	5	7	5	4	5	0.9
COMPUTERIZED CONTROL	16	7	15	12	13	14	12	12	2.1
SEQUENTIAL CONTROL	9	7	11	7	11	8	9	8	1.5
PLANT AUTOMATION	5	0	6	4	6	4	5	5	0.7
AUTOMATIC PRODUCTION	7	2	7	6	6	7	6	8	1.0
SCADA SYSTEMS	2	0	3	2	3	2	3	3	0.4
CIRCUIT ANALYSIS	10	7	11	10	10	8	10	9	1.6
INDUSTRIAL MANAGEMENT	6	3	9	6	8	6	7	5	1.0
BASIC PROGRAMMING	18	13	18	16	18	18	17	17	2.8
BASIC COMPUTER NETWORKS & SERVER SERVICES	16	10	17	14	18	16	17	16	2.6
COMPUTERIZED CIRCUIT DESIGNS	16	9	18	13	15	16	13	13	2.4
SENSORS & SIGNAL RECORDING	11	7	12	9	11	10	10	10	1.7
MICRO DETECTOR APPLICATIONS	15	12	16	14	15	15	13	14	2.4
INTERNET PROGRAMMING AND SECURITY	15	8	17	13	16	14	15	15	2.4
INDUSTRIAL SYSTEMS	9	2	7	5	7	7	7	9	1.1
INSPECTION SYSTEMS	4	2	6	5	8	7	7	7	1.0
NUMERICAL SIGNALING SYSTEM	8	7	7	6	8	7	7	7	1.2

Remarks: Among 56 teachers, expertise fields of a teacher is unkown.

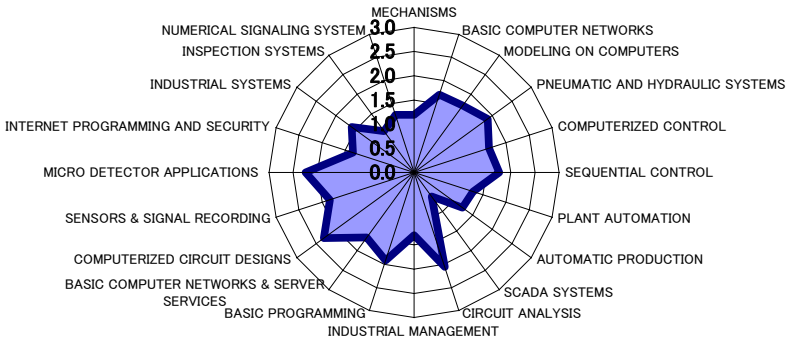
(1) Overall Total, 56 Teachers



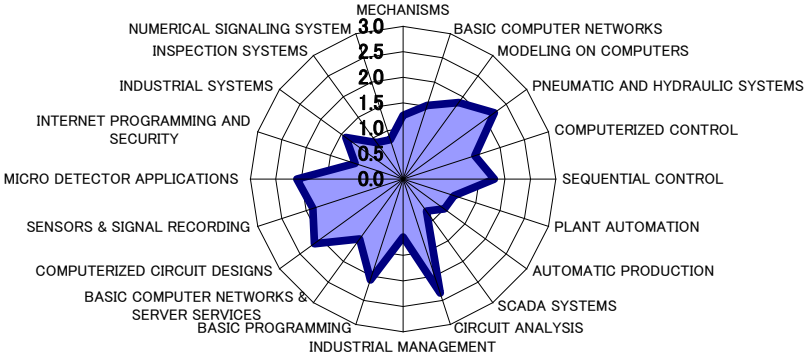
(2) Machinery, 19 Teachers

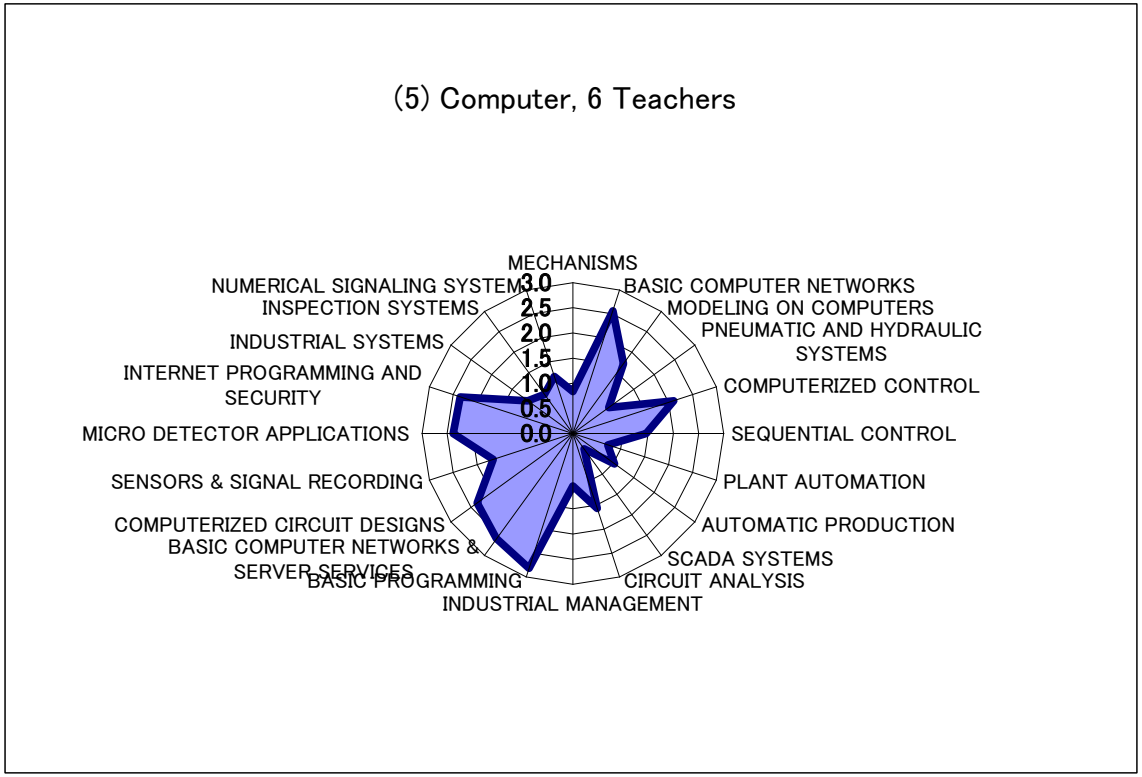


(3) Electronics and Telecommunications, 17 Teachers



(4) Electrics, 13 Teachers




(5) Computer, 6 Teachers
MECHANISMS
BASIC COMPUTER NETWORKS
MODELING ON COMPUTERS
PNEUMATIC AND HYDRAULIC SYSTEMS
COMPUTERIZED CONTROL
SEQUENTIAL CONTROL
PLANT AUTOMATION
AUTOMATIC PRODUCTION
SCADA SYSTEMS
CIRCUIT ANALYSIS
INDUSTRIAL MANAGEMENT
BASIC PROGRAMMING
BASIC COMPUTER NETWORKS & SERVER SERVICES
COMPUTERIZED CIRCUIT DESIGNS
SENSORS & SIGNAL RECORDING
MICRO DETECTOR APPLICATIONS
INTERNET PROGRAMMING AND SECURITY
INDUSTRIAL SYSTEMS
INSPECTION SYSTEMS
NUMERICAL SIGNALING SYSTEMS
3.0
2.5
2.0
1.5
1.0
0.5
0.0

REPUBLIC OF TURKEY
MINISTRY OF NATIONAL EDUCATION

FRAMEWORK CURRICULUM FOR INDUSTRIAL AUTOMATION TECHNOLOGIES

SVET

(STRENGTHENING THE VOCATIONAL EDUCATION AND TRAINING SYSTEM IN TURKEY)

ANKARA, 2006

FOREWORD

Having a history of only fifteen years, Turkish industrial automation sector significantly contributes to the economic development and job creation in Turkey.

Based on program development activities that were launched with sector screening process under the scope of SVET, mechatronics and industrial control curricula were developed in the field of Industrial Automation Technologies.

Preparation and introduction of curricula on Industrial Automation Technologies in Turkey is a very important initiative that will serve to overcome the shortage of skilled personnel and the gap in associated training.

SVET Industrial Automation Technologies program was prepared in cooperation with MoNE (Ministry of National Education) experts, field teachers, academics, sector representatives and professionals coming from the field.

TABLE OF CONTENTS

INTRODUCTION

The design and manufacturing of industrial products have experienced worldwide fundamental changes particularly in the aftermath of 1980s. Evolving technological processes in developing and changing world markets have paved the way for a significant transformation in qualities and functions of industrial products. While rapidly evolving technology and constantly changing market conditions demand more economic and quality products, customers tend to expect a surge in multifunctional products. Products have become remarkably short-lived due to rapidly changing customer demands and intensive competition in the face of the market. Under such challenging conditions, conventional design and manufacturing technology has become inadequate, opening the way for new concepts and methods aiming to satisfy this requirement. One of those new concepts is industrial automation. Having had an influence on underlying design philosophy and engineering training, industrial automation gave rise to significant changes in industrial technology production and engineering training. As robot technology finds its place in a wide range of applications today, industrial automation is now inevitably considered as an integral part of technology.

Industrial automation mainly focuses on product design, system dynamics and intelligent control, monitoring, modeling and control of production processes, mobile robot systems, power electronics, microsystem design and applications, industrial control design, sensors and robot systems, image processing, artificial nerve networks, artificial intelligence and virtual reality, defense industry and automotive and textile sectors.

To serve this purpose, the "Project for Establishing an Industrial Automation Technologies Department" was commenced within the framework of the cooperation agreement ratified between Turkish and Japanese governments in October 2000 and the project was finalized in April 2006.

Relevant organizations in the sector were involved in preparation of the curricula and the modules through cooperation and exchange of opinion on workforce-related business expectations. Questionnaires were used to collect data that would give direction to the development of curriculum in the field of Industrial Automation Technologies. Academics from various universities and civil society organizations contributed to the program development process. Sector screening activities and identification of vocational qualifications were carried out by means of questionnaires which in the end established the needs and program related expectations of industrial automation sector in Turkey. Those needs formed the basis for program activities.

Following fields have been incorporated in the Industrial Automation Technologies program;

1. Industrial Control,
2. Mechatronics.

GENERAL REMARKS ON CURRICULUM

SECTOR	**INDUSTRIAL AUTOMATION**
FIELD	**INDUSTRIAL AUTOMATION TECHNOLOGIES**
FIELD DESCRIPTION	Field of education and training aiming to provide qualifications of branches under Industrial Automation Technologies.
PURPOSE OF THE FIELD	To train skilled personnel with necessary vocational qualifications for occupations under Industrial Automation Technologies based on the needs of the sector and scientific/technological advancements.
BRANCH PROGRAMS, DEFINITIONS AND PURPOSES	**1. MECHATRONICS** **Definition:** A branch of education and training aiming to provide qualifications of mechatronics technicians and sub-occupations. **Purpose:** To train professionals with qualifications of mechatronics technicians and of sub-occupations implementing certificate programs in the field of Industrial Automation Technologies. **2. INDUSTRIAL CONTROL** **Definition:** A branch of education and training aiming to provide qualifications of industrial control and sub-occupations. **Purpose:** To train professionals with qualifications of industrial control and of sub-occupations implementing certificate programs in the field of Industrial Automation Technologies.
ENTRY CONDITIONS	Students must be in a healthy condition to fulfill the tasks required by the occupations in the field of Industrial Automation Technologies.
EMPLOYMENT OPPORTUNITIES	Graduates of Industrial Automation Technologies Program can be recruited in the following sectors depending on their qualifications in the branch/occupation of their choice; 1. Automotive, 2. Plastics, 3. Machinery, 4. Textile, 5. Ship Automation, 6. Energy, 7. Petrochemistry, 8. Agriculture,

	9. Food, 10. Medical Electronics, 11. Defense, 12. Aerospace, 13. Communication etc.
EDUCATION-TRAINING ENVIRONMENTS AND EQUIPMENT	1. The program is implemented in secondary schools progressing to diploma as well as all sorts and degrees of formal and nonformal vocational and technical education-training institutions implementing certificate programs. 2. Standard equipment of Industrial Automation Technologies and those necessary for practicing the occupations should be provided to implement the program.
TRAINERS	1. Trainers in the program should have previous training in the field of Industrial Automation Technologies and preferably past experience in the sector. 2. Master trainers, technicians and professionals with sufficient experience in Industrial Automation Technologies can be asked to cooperate when necessary for the implementation of the program.
EVALUATION AND ASSESSMENT	Students must be assessed by means of various evaluation tools pursuant to the MoNE Secondary Schools Class Achievement and Examination Regulation. Accordingly, the success rate of students in a course is determined by; 1. Qualifications gained by students during the performance of modules under the course (knowledge, skills and attitude), 2. Assessing all learning activities of students at schools, firms and on their own.
HORIZONTAL AND VERTICAL TRANSFERS	As the program has a broad-based and modular structure, horizontal and vertical transfers are allowed within the framework of Vocational and Technical Education/Training Regulation. 1. Transfer is permissible between all programs and branches progressing to a certificate or a diploma. 2. Students who are entitled to a diploma can transfer without any examination to programs that are the continuation of Industrial Automation Technologies or a vocational college with the most similar program or either they may prefer other higher education institutions depending on their exam

	scores.
CERTIFICATION	1. Graduates are awarded diplomas in relevant fields/branches. 2. All branch-specific courses and modules undertaken by the student are specified in the diploma supplement. 3. As students leave or graduate from the program, they are awarded a certificate demonstrating their qualifications. This certificate must be of equal value to that granted to the students graduating from any nonformal vocational and technical training programme with the same qualifications. 4. Vocational qualifications gained by the students are assessed in the documentation for certificates
DURATION OF TRAINING	1. The total duration of training in the field program is planned to be 3 academic years as of 9th grade. 2. The duration of training is distributed between the school, firms and individual learning periods as explained in Industrial Automation Technologies weekly course hours chart, courses and modules.
TRAINING METHODS AND TECHNIQUES	Methods and techniques supporting individual learning are mainly used for modular training. 1. Teachers provide guidance to students. 2. Students are encouraged to learn on their own. 3. Students are encouraged to be active. 4. Students are encouraged to do research. 5. Students can assess themselves. 6. Methods and techniques that tend to provide qualifications are applied.
INSTITUTIONS AND AGENCIES TO BE INVOLVED	Students are given direction on program activities, employment opportunities and planning in cooperation with nearby universities, civil society organizations, firms operating in industrial automation sector, professional chambers and professionals from the field.
BENEFITS FOR STUDENTS	Following are the benefits the students will gain at the end of the program in relation with their branch/occupation; 1. They will gain common basic knowledge and skills in the field. 2. They will gain basic qualifications in Industrial Automation Technologies. 3. They will perform tasks required by the branch.

	4. They will gain special vocational qualifications required by the branch.
TRAINING EDUCATION ACTIVITIES	Training-education activities are performed as specified under courses and relevant modules in Industrial Automation Technologies Weekly Course Hours Chart.

ANADOLU MESLEK LİSELERİ
ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI
(MEKATRONİK VE ENDÜSTRİYEL KONTROL DALLARI)
ÇERÇEVE ÖĞRETİM PROGRAMI HAFTALIK DERS ÇİZELGESİ

DERS KATEGORİLERİ		DERSLER	IX SINIF	X SINIF	XI SINIF	XII SINIF
ORTAK DERSLER		*DİL VE ANLATIM	2	2	2	2
		TÜRK EDEBİYATI	3	3		
		DİN KÜLTÜRÜ VE AHLAK BİLGİSİ	1	1	1	1
		TARİH	2	2		
		T.C. İNKILÂP TARİHİ VE ATATÜRKÇÜLÜK			2	
		COĞRAFYA	2	2		
		MATEMATİK	4			
		FİZİK	2			
		KİMYA	2			
		BİYOLOJİ	2			
		SAĞLIK BİLGİSİ	2			
		FELSEFE			2	
		YABANCI DİL	10	4	4	4
		BEDEN EĞİTİMİ	2			
		MİLLÎ GÜVENLİK BİLGİSİ		1		
		TRAFİK VE İLK YARDIM			1	
		TOPLAM	34	15	12	7
ALAN/DAL DERSLERİ	ALAN ORTAK DERSLERİ	BİLGİ VE İLETİŞİM TEKNOLOJİSİ	2			
		MATEMATİK		3		
		MESLEKİ GELİŞİM		2		
		TEMEL MEKANİK		5		
		*TEMEL ENDÜSTRİ UYGULAMALARI		9		
		TEKNİK VE MESLEK RESİM		2		
	DAL DERSLERİ	*İŞLETMELERDE BECERİ EĞİTİMİ				
		MEKANİZMALAR				
		TEMEL BİLGİSAYAR AĞLARI				
		BİLGİSAYARDA MODELLEME				
		PNÖMATİK VE HİDROLİK SİSTEMLER				
		*BİLGİSAYARLI KONTROL				
		*ARDIŞIK KONTROL				
		*FABRİKA OTOMASYON				
		OTOMATİK ÜRETİM				
		SCADA SİSTEMLERİ				
		TEKNİK YABANCI DİL				
		DEVRE ANALİZİ			27	30
		ENDÜSTRİYEL YÖNETİM				
		TEMEL PROGRAMLAMA				
		TEMEL BİLGİSAYAR AĞLARI VE SUNUCU SERVİSLERİ				
		BİLGİSAYARLI DEVRE TASARIMI				
		ALGILAYICILAR VE SİNYAL İŞLEME				
		*MİKRODENETLEYİCİ UYGULAMALARI				
		İNTERNET PROGRAMCILIĞI VE GÜVENLİĞİ				
		ENDÜSTRİYEL SİSTEMLER				
		DENETİM SİSTEMLERİ				
		SAYISAL İŞARET İŞLEME				
ALAN/DAL DERSLERİ TOPLAMI			2	21	27	30
SEÇMELİ DERSLER			3	3		2
REHBERLİK			1	1	1	1
GENEL TOPLAM			40	40	40	40

Not: (*) Milli Eğitim Bakanlığı Orta Öğretim Kurumları Sınıf Geçme ve Sınav Yönetmeliği'nin 33. maddesi uyarınca yıl sonu başarı ortalaması ile başarılı sayılamayacak dersleri ifade eder.

ANADOLU TEKNİK LİSELERİ
ENDÜSTRİYEL OTOMASYON TEKNOLOJİLERİ ALANI
(MEKATRONİK VE ENDÜSTRİYEL KONTROL DALLARI)
ÇERÇEVE ÖĞRETİM PROGRAMI HAFTALIK DERS ÇİZELGESİ

DERS KATEGORİLERİ		DERSLER	IX. SINIF	X. SINIF	XI. SINIF	XII. SINIF
ORTAK DERSLER		*DİL VE ANLATIM	2	2	2	2
		TÜRK EDEBİYATI	3	3	3	3
		DİN KÜLTÜRÜ VE AHLAK BİLGİSİ	1	1	1	1
		TARİH	2	2	-	-
		T.C. İNKILÂP TARİHİ VE ATATÜRKÇÜLÜK	-	-	2	-
		COĞRAFYA	2	2	-	-
		MATEMATİK	4	-		
		FİZİK	2	-		
		KİMYA	2	-		
		BİYOLOJİ	2	-		
		SAĞLIK BİLGİSİ	2	-	-	-
		FELSEFE	-	-	2	-
		YABANCI DİL	10	4	4	4
		BEDEN EĞİTİMİ	2	-	-	-
		MİLLÎ GÜVENLİK BİLGİSİ	-	1	-	-
		TRAFİK VE İLK YARDIM	-	-	1	-
		TOPLAM	34	15	15	10
ALAN/DAL DERSLERİ	ALAN ORTAK DERSLERİ	BİLGİ VE İLETİŞİM TEKNOLOJİSİ	2			
		MATEMATİK	-	4	4	4
		GEOMETRİ	-	2	2	2
		ANALİTİK GEOMETRİ	-	-	-	2
		FİZİK	-	2	3	3
		KİMYA	-	2	3	3
		BİYOLOJİ	-	2	3	3
		MESLEKİ GELİŞİM		2		
		TEMEL MEKANİK		5		
		*TEMEL ENDÜSTRİ UYGULAMALARI		8		
		TEKNİK VE MESLEK RESİM		2		
	DAL DERSLERİ	İŞLETMELERDE BECERİ EĞİTİMİ	-	-	14	17
		MEKANİZMALAR				
		TEMEL BİLGİSAYAR AĞLARI				
		BİLGİSAYARDA MODELLEME				
		PNÖMATİK VE HİDROLİK SİSTEMLER				
		*BİLGİSAYARLI KONTROL				
		*ARDIŞIK KONTROL				
		*FABRİKA OTOMASYON				
		OTOMATİK ÜRETİM				
		SCADA SİSTEMLERİ				
		TEKNİK YABANCI DİL				
		DEVRE ANALİZİ				
		ENDÜSTRİYEL YÖNETİM				
		TEMEL PROGRAMLAMA				
		TEMEL BİLGİSAYAR AĞLARI VE SUNUCU SERVİSLERİ				
		BİLGİSAYARLI DEVRE TASARIMI				
		ALGILAYICILAR VE SİNYAL İŞLEME				
		*MİKRODENETLEYİCİ UYGULAMALARI				
		İNTERNET PROGRAMCILIĞI VE GÜVENLİĞİ				
		ENDÜSTRİYEL SİSTEMLER				
		DENETİM SİSTEMLERİ				
		SAYISAL İŞARET İŞLEME				
ALAN/DAL DERSLERİ TOPLAMI			2	29	29	34
SEÇMELİ DERSLER			3		-	
REHBERLİK			1	1	1	1
GENEL TOPLAM			40	45	45	45

Not: (*) Milli Eğitim Bakanlığı Orta Öğretim Kurumları Sınıf Geçme ve Sınav Yönetmeliği'nin 33. maddesi uyarınca yıl sonu başarı ortalaması ile başarılı sayılamayacak dersleri ifade eder.

REMARKS ON THE IMPLEMENTATION OF THE PROGRAM

The aim of the Framework Curriculum on Industrial Automation Technologies is providing students with basic knowledge and skills in respective fields and branches as well as training creative, target-setting/achieving and professionally qualified students capable of adapting to innovations and change, communicating with others and inviting criticism.

The program has been designed for a period of 4 years. Courses of the 9th grade are common with all general, vocational and technical secondary education institutions. Upon the completion of the 9th grade, students identify the fields they are interested in and start their education-training in those fields as of the 10th grade.

During the basic structuring of the program, priority was given to common courses and common field courses for 9^{th} and 10^{th} grades and to branch-specific courses for 11^{th} and 12^{th} grades. Basic qualifications expected from national and international workforce, research about the sector and vocational qualifications were taken into consideration as the contents of the mentioned courses were established.

Courses aiming to provide common qualifications for all branches in the field are given mainly in the 10^{th} and 11^{th} grades. The curriculum for the 12^{th} grade incorporates courses providing branch-specific qualifications progressing to diploma. Upon the completion of 10^{th} grade, students choose their branches taking account of regional and sectoral needs, equipment available at schools, availability of trainers, physical capacity and their vocational qualifications. Regional employment opportunities are taken into consideration in choosing fields and branches.

Each school has the possibility to reflect expectations of the sector, changing conditions and occupational developments to the program. As for 10^{th} grade courses where modules applicable for all branches are delivered under common field courses; modules specific to the branches to be opened at the school may be prioritized. Occupation-specific courses, modules and module contents delivered in 11^{th} and 12^{th} grades may be modified and improved as necessary. Such modifications are made in cooperation with the coordinator teacher, group teachers and professionals coming from the sector. The modification work is notified to the Ministry and the relevant Education Department responsible for the school.

Weekly Course Hours Chart covers Common Courses, Field/Branch Courses and Elective Courses. Field/Branch courses are composed of certain modules. Total learning duration was planned to be 40 hours for the content of each module under these courses. This duration covers studying periods of students both under the guidance of a teacher and on their own. To exemplify, if the duration of a module is 40/32, this means 32 hours will be spent under the guidance of a teacher and the remaining 8 hours by the students on their own.

Students graduating from the program may either start working or progress with higher education. If a student leaves the program at any time during his/her training, qualifications gained by this student are assessed in certificate programs.

Programs were prepared in line with international vocational classification taking account of occupational standards, training standards and vocational qualifications. The mentioned standards and qualifications must be always considered at the implementation stage.

Vocational and Anatolian Vocational High Schools specified in Framework Curricula and Weekly Course Hour Charts refer to all secondary schools progressing to diploma in the field of vocational and technical education-training including girls', industrial, commerce, communication, hotel and tourism vocational schools.

Weekly course hours charts, courses, modules and implementation issues are discussed in detail in framework curricula and program books.

PROGRAM COURSES

1. COMMON COURSES

Courses, course hours and programs established by the Board of Education are implemented.

INTRODUCTION AND ORIENTATION

An introductory course about the sector where vocational fields, vocational branches, required equipment, conditions for entry, job opportunities, current situation and future trends, related occupations, working conditions and work-related health problems are explained in connection with all sectors and job profiles.

The purpose of this course is to give direction to the students for understanding the peculiarities of all sectors and occupations and making an appropriate choice of occupation depending on their interests and tendencies.

Modules of the Course	Hour	Competences To Be Gained
Introductory Module for Vocational and Technical Training Fields	40/32	To introduce vocational fields and occupations requiring vocational and technical training
Introductory Module for Academic, Sports and Art Training Fields	40/32	To introduce vocational fields requiring academic training

2. FIELD/BRANCH COURSES

A group of courses covering basic knowledge and skills for occupations/branches listed under Industrial Automation Technologies. These courses were incorporated in the curriculum primarily for 10th and 11th grades to cover a period of three years depending on the peculiarities of fields and branches.

Those field/branch courses marked with **(*)** are compulsory for the mentioned fields and branches. They refer to courses which will not be considered accomplished with grade point average (GPA) in accordance with the Article 33 of MoNE Secondary Schools Class Achievement and Examination Regulation.

Compulsory courses for the branches/occupations listed under Industrial Automation Technologies are as follows:

OCCUPATIONS/ BRANCHES	COMPULSORY COURSES
Mechatronics Branch	• Basic Industrial Applications • Successive Control • Plant Automation
Industrial Control Branch	• Basic Industrial Applications • Computerized Control • Microdetection Applications

COMMON FIELD COURSES

Courses aiming to provide common qualifications and vocational qualifications in all fields and branches listed under Industrial Automation Technologies.

INFORMATION AND COMMUNICATION TECHNOLOGY

A course aiming to teach computer literacy, hardware and software (Word, Excel etc.) as well as internet applications.

The purpose of this course is to provide students with basic knowledge and skills necessary to draft documents in computer environment.

Modules of the Course	Hour	Competences To Be Gained
Computer Literacy	40/32	To use basic computer hardware and software (word, excel etc.)
Drafting Documents	40/32	To draft documents in computer environment

VOCATIONAL DEVELOPMENT

A course aiming to train productive and highly skilled workforce with general information and skills that will be applicable for all fields and instrumental in life-long professional improvement including comprehending science and technology, establishing good relations and adapting to business life.

The purpose of this course is to provide students with qualifications expected from both national and international workforce.

Modules of the Course	Hour	Competences To Be Gained
Social Relations	40/16	To establish sound social relations and communication skills
Communication in	40/16	To establish sound relations and

Working Life		communication skills in working life
Diction 1	40/32	To have good command of Turkish
Diction 2	40/32	
Personal Development	40/16	To follow professional developments and achieve continuous self-improvement
Entrepreneurship	40/24	To gain skills for management, finance, marketing, advertisement, sales, labor law, career development and business setup
Environmental Protection	40/16	To be environmentally conscious and to protect environment
Professional Ethics	40/16	To respect norms and rules of professional ethics
Job Organization	40/16	To undertake plans, programs and organizations at the workplace
Occupational Health and Safety	40/24	To respect occupational health and safety regulation and to take necessary measures
Research Techniques	40/16	To do basic research

Duration of this course is determined in the weekly course hours chart by choosing modules according to the peculiarities of the field and environmental conditions. Modules that cannot be taken under this course can be delivered along with the modules of branch courses, as necessary.

BASIC MECHANICS

A course aiming to teach production by manual leveling, machining by basic operations, production by basic milling and production by lathing.

The purpose of this course is to provide students with manual leveling, basic milling and basic lathing qualifications.

Modules of the Course	**Hour**	**Competences To Be Gained**
Manual Leveling 1	40/32	Machining
Manual Leveling 2	40/32	
Basic Milling	40/32	To carry out preparatory works on milling machines
Basic Lathing 1	40/32	To conduct basic lathing operations
Basic Lathing 2	40/32	

BASIC INDUSTRIAL APPLICATIONS

A course aiming to provide students with knowledge and skills for direct current circuits, alternative current circuits, compression circuits and soldering, transistor circuits, basic power supplies and logic circuits.

The purpose of this course is to provide students with qualifications to install direct and alternative current circuits, to conduct electrical measurements of such circuits, to identify analogue circuit elements, to install transistor circuits, to identify logic circuit elements, to install logic circuits, to mill using relevant techniques, to install compression circuits, to install basic power supplies and to test currents.

Modules of the Course	Hour	Competences To Be Gained
Direct Current Circuits	40/32	To install direct current circuits
Alternative Current Circuits	40/32	To install alternative current circuits
Soldering and Compression Circuit	40/32	To do good quality soldering and to install compression circuits
Analogue Circuit Elements	40/32	To install electronic circuits using analogue circuit elements
Transistor Circuits	40/32	To install transistor circuits
Basic Power Supply	40/32	To setup operational power supplies
Logic Circuits 1	40/32	To operate basic logic processes
Logic Circuits 2	40/32	To install logic circuits

TECHNICAL AND VOCATIONAL DRAWINGS

A course aiming to provide basic knowledge and skills about Turkish Institute of Standards and technical drawing rules, norm (technical) writings and numbers, basic geometrical drawings, projection, projected view, measurement, cross section, perspective view and drawing intersections and electrical-electronic circuit diagrams.

The purpose of this course is to provide students with qualifications to make drawings according to the rules and standards, to execute norm writing and to read and draw electrical-electronic circuit diagrams.

Modules of the Course	Hour	Competences To Be Gained
Drawing	40/32	To draw and execute norm writing
Drawing Circuit Diagrams	40/32	To draw electrical and electronic circuits

BRANCH COURSES

Branch courses aim to provide branch-specific, vocationally supportive qualifications in the field of Industrial Automation Technologies and are envisaged to be delivered on-the-job or at the workplaces mainly for senior class students.

Courses suiting the peculiarities of a branch are selected from the Weekly Course Hours Chart in the Framework Curriculum depending on the type of the school and the academic year the course will be delivered. In identifying branch courses progressing to diploma, other courses that support the branch are chosen as well.

Contents of selected courses are determined with the decision of professionals from the sector, coordinator teachers and field teachers at schools by choosing modules that satisfy regional qualifications and requirements of the sector. Course hours, on the other hand, are determined according to the durations and contents of modules under the courses.

As technical high schools provide more academic qualifications than vocational high schools throughout a period of 4 years, modules and applications ensuring the use of such academic qualifications may dominate in selection and implementation of modules under branch courses.

SKILLS TRAINING AT FIRMS

Each school identifies the content of Skills Training at Firms Course predominantly by branch-specific modules to reflect regional characteristics and sector expectations. However, if modules reflecting regional characteristics and sector expectations are not included in the program, new module contents are prepared and integrated into the program. The course content is planned and delivered based on the decision of sector representatives, coordinator teacher and field teachers at schools.

Skills Training at Firms course is delivered pursuant to the relevant provisions of Vocational and Technical Education and Training Regulation. Students from schools without Skills Training at Firms course undergo a trainee program in summers.

MECHANISMS

A course aimed at teaching issues about mechanisms and electromechanisms.

The purpose of this course is provide students with necessary qualifications to install and uninstall simple mechanisms and bearings, to understand simple mechanisms, to setup mechanisms and electromechanisms.

Modules of the Course	Hour	Competences To Be Gained
Mechanism Technique 1	40/32	To install and uninstall simple mechanisms
Mechanism Technique 2	40/32	To install and uninstall bearings
Mechanism Technique 3	40/32	To setup simple mechanisms
Mechanism Technique 4	40/32	To setup mechanisms
Mechanism Technique 5	40/32	To setup electromechanisms

BASIC COMPUTER NETWORKS

A course aiming to teach issues around installing basic level peer-to-peer computer networks.

The purpose of this course is to provide students with qualifications necessary to install basic level peer-to-peer computer networks.

Modules of the Course	Hour	Competences To Be Gained
Basic Computer Networks 1	40/32	To install basic level peer-to-peer computer networks
Basic Computer Networks 2	40/32	
Basic Computer Networks 3	40/16	

MODELLING ON COMPUTER

A course aiming to teach issues around modelling in computer environment by using modelling software.

The purpose of this course is to provide students with qualifications to model workpieces with CAD software.

Modules of the Course	Hour	Competences To Be Gained
Modelling On Computer 1	40/32	To model workpieces jobs with CAD programme
Modelling On Computer 2	40/32	

PNEUMATIC AND HYDRAULIC SYSTEMS

A course aiming to teach issues around pneumatics, electropneumatics, hydraulics and electrohydraulics.

The purpose of this course is to provide students with necessary qualifications to install basic pneumatic, electro-pneumatic, hydraulic and electro-hydraulic circuits.

Modules of the Course	Hour	Competences To Be Gained
Basic Pneumatic	40/24	To install basic pneumatic circuits
Advanced Pneumatic	40/24	To install advanced pneumatic circuits
Electro-pneumatic Circuits	40/32	To install electro-pneumatic circuits
Hydraulic Systems	40/32	To install hydraulic circuits
Electro-hydraulic Systems	40/32	To install electro-hydraulic circuits

COMPUTERIZED CONTROL

A course aiming to teach visual programming and serial/ parallel port control in computer environments.

The purpose of this course is to provide students with necessary qualifications to use visual programming medium, coding in visual programming, to create components in visual programming, to write graphic programs and to control parallel and serial ports.

Modules of the Course	Hour	Competences To Be Gained
Computerized Control 1	40/32	To use visual programming
Computerized Control 2	40/32	To write codes in visual programming
Computerized Control 3	40/32	To create components in visual programming
Computerized Control 4	40/32	To write graphic programs
Computerized Control 5	40/32	To conduct parallel port controls
Computerized Control 6	40/32	To conduct series port control

SUCCESSIVE CONTROL

A course aiming to teach issues around automatic remote control systems and programmable logic controllers.

The purpose of this course is to provide students with qualifications necessary to choose automatic remote control circuit elements, to install asynchronous engine control circuits, to install asynchronous engine starter circuits, to choose and connect PLC and input/output elements, to load PLC program, to do SFC programming in PLC, to program the operator panel in conformity with the system and to control system through the panel, to control engines and units with PLC.

Modules of the Course	**Hour**	**Competences To Be Gained**
Circuit Elements of Control	40/32	To choose remote control circuit elements
Asynchronous Engine Remote Control Techniques	40/32	To install asynchronous engine control circuits
To Start Asynchronous Engines	40/32	To install asynchronous engine starter circuits
Preparation for PLC	40/32	To prepare for PLC with relays
PLC Programming	40/32	To make programming on PLC
SFC Programming	40/24	To make SFC programming on PLC
Use of Panels on PLC	40/24	To use panels on PLC
Communication on PLC	40/32	To ensure communication on PLC
System Planning with PLC	40/32	To design systems on PLC
Introduction to PLC	40/32	To choose system-compliant PLC and input-output elements and to make connection
PLC Programming Techniques	40/32	To design and install PLC programme for the system to be controlled
Operator Panels	40/32	To programme the operator panel in conformity with the system and to control system through the panel
Engine Control with PLC	40/32	To control engines with PLC
Unit Control with PLC	40/32	To control units with PLC

PLANT AUTOMATION

A course aiming to teach issues around controlling and using the automation systems at plants.

The purpose of this course is to provide students with necessary qualifications to commission plant automation network systems, to control positions, to commission inverters, to make ID interface connections, to programme store modules, test modules, assembly modules, operational modules and transmission system modules.

Modules of the Course	Hour	Competences To Be Gained
Plant Automation 1	40/32	To commission plant automation network
Plant Automation 2	40/32	To control position
Plant Automation 3	40/32	To commission inverters
Plant Automation 4	40/32	To make ID interface connections
Plant Automation 5	40/32	To programme store modules
Plant Automation 6	40/32	To programme test modules
Plant Automation 7	40/32	To programme assembly modules
Plant Automation 8	40/32	To programme operational modules
Plant Automation 9	40/32	To programme transmission system modules

AUTOMATIC PRODUCTION

A course aiming to teach issues around producing workpieces on CNC by using CAM programme, supervision of flexible manufacturing cell, conveyors and holders.

The purpose of this course is to provide students with necessary qualifications to produce workpieces on CNC by using CAM programme, to supervise flexible manufacturing cell and to use conveyors and holders.

Modules of the Course	Hour	Competences To Be Gained
Automatic Production 1	40/32	To produce workpieces on CNC by using CAM programme
Automatic Production 2	40/32	
Automatic Production 3	40/32	To use conveyors and holders
Automatic Production 4	40/32	
Automatic Production 5	40/32	
Automatic Production 6	40/32	To use conveyors and holders

Automatic Production 7	40/32	
Automatic Production 8	40/32	

SCADA SYSTEMS

A course aiming to teach issues around simple control systems and the use of SCADA (Supervisory Control and Data Acquisition) programme.

The purpose of this course is to provide students with necessary qualifications to use operational amplifiers, to control open loops, to control closed loops and to use SCADA program.

Modules of the Course	Hour	Competences To Be Gained
Operational Amplifiers	40/32	To use operational amplifiers
Open Loop Control	40/32	To control open loops
Closed Loop Control	40/32	To control closed loops
SCADA Systems 1	40/32	To use SCADA program
SCADA Systems 2	40/32	

TECHNICAL FOREIGN LANGUAGE

A course aiming to teach issues around foreign technical terminology, terms and concepts related to industrial automation technologies and Turkish-English versions of texts.

The purpose of this course is to provide students with necessary qualifications to listen, write, speak and communicate in a foreign language by using technical terminology pertaining to the occupation.

Modules of the Course	Hour	Competences To Be Gained
Technical Foreign Language (English) 1	40/32	To write, listen, speak and comprehend vocational subjects in foreign language
Technical Foreign Language (English) 2	40/32	

CIRCUIT ANALYSIS

A course aiming to teach issues around analysis of one phase and three phase alternative current circuits.

The purpose of this course is to provide students with necessary qualifications to analyze circuits and make electrical measurements on three phase systems.

Modules of the Course	Hour	Competences To Be Gained
Circuit Analysis 1	40/32	To conduct circuit analysis
Circuit Analysis 2	40/32	To make electrical measurements on three phase systems

INDUSTRIAL MANAGEMENT

A course aiming to teach issues around industrial management and quality control.

The purpose of this course is to provide students with necessary qualifications to draw charts for industrial management.

Modules of the Course	Hour	Competences To Be Gained
Job Organization	40/32	To draw charts for industrial management
Quality Control	40/32	

BASIC PROGRAMMING

A course aiming to teach knowledge and skills for programming.

The purpose of this course is to provide students with necessary qualifications to make preparation for programming and to write programs.

Modules of the Course	Hour	Competences To Be Gained
Basic Programming 1	40/32	To make preparation for programming
Basic Programming 2	40/32	Programming
Basic Programming 3	40/32	

BASIC COMPUTER NETWORKS AND SERVER SERVICES

A course aiming to teach issues around basic level peer-to-peer computer networks and setting up server services.

The purpose of this course is to provide students with necessary qualifications to setup basic level peer-to-peer computer networks, to work with server based operational systems and to setup server services.

Modules of the Course	Hour	Competences To Be Gained
Basic Computer Networks 1	40/32	To setup basic level peer-to-peer computer networks
Basic Computer Networks 2	40/32	
Basic Computer Networks 3	40/16	
Basic Computer Networks 1	40/24	To work with a server-based operational system
Basic Computer Networks 2	40/32	To setup server services
Basic Computer Networks 3	40/32	
Basic Computer Networks 4	40/32	

COMPUTERIZED CIRCUIT DESIGN

A course aiming to teach issues around drawing electrical-electronic circuit and compression circuit diagrams in computer environment.

The purpose of this course is to provide students with necessary qualifications to draw electrical-electronic circuit and compression circuit diagrams in computer environment.

Modules of the Course	Hour	Competences To Be Gained
Computerized Circuit Design	40/32	To draw electrical-electronic circuit diagrams in computer environment
Computerized Compression Circuit Drawing	40/32	To draw compression circuit diagrams in computer environments

SENSORS AND SIGNAL RECORDING

A course aiming to teach issues around establishing signal recording circuits, sensors and measuring physical quantities.

The purpose of this course is to provide students with necessary qualifications to control current and voltage by special semi-conductors, to

install oscillator circuits, to use operational amplifiers, to measure temperature, power, weight and pressure and to measure level and flow.

Modules of the Course	Hour	Competences To Be Gained
Switching Elements	40/16	To use switching and triggering elements
Oscillators	40/16	To install oscillator circuits
Operational Amplifiers	40/32	To use operational amplifiers
Measurement of Temperature	40/32	To measure temperature
Measurement of Power, Weight and Pressure	40/32	To measure power, weight and pressure
Measurement of Level	40/32	To measure level
Measurement of Flow	40/32	To measure flow

MICRODETECTION APPLICATIONS

A course aiming to teach issues around programming with microdetectors, and developing applications with digital and analog operations.

The purpose of this course is to provide students with necessary qualifications to select microdetectors and load programs, to execute basic input-output processes by microdetectors, to control driver elements, to carry out analog operations and advanced programming, to establish microdetector circuits and to operate advanced applications with microdetectors

Modules of the Course	Hour	Competences To Be Gained
Microdetectors 1	40/32	To select appropriate microdetectors and to install programs
Microdetectors 2	40/32	To execute basic input/output processes with microdetectors
Microdetectors 3	40/32	To control driver elements with microdetectors
Microdetectors 4	40/32	To carry out analogue processes with microdetectors
Microdetectors 5	40/32	To operate advanced programs with microdetectors
Microdetectors 6	40/32	To install microdetector circuits
Microdetection Applications 1	40/32	To operate advanced applications with microdetectors
Microdetection Applications 2	40/32	To develop applications with microdetectors

Microdetection Applications 3	40/32	

INTERNET PROGRAMMING AND SAFETY

A course aiming to teach issues around internet programming and safety.

The purpose of this course is to provide students with necessary qualifications to make server-side programming, to set up relational database, to produce internet program applications, to ensure internet safety, to setup remote servers and electronic mail servers.

Modules of the Course	Hour	Competences To Be Gained
Programming	40/32	To make server-side programming
Database	40/32	To set up relational database
Internet Programme Applications	40/32	To produce Internet programme applications
Internet Safety	40/32	To ensure Internet safety
Remote Servers	40/32	To setup remote servers
E-mail Servers	40/32	To setup electronic mail servers

INDUSTRIAL SYSTEMS

A course aiming to teach embedded systems and SCADA (Supervisory Control and Data Acquisition) system.

The purpose of this course is to provide students with necessary qualifications to use embedded operational systems, to develop embedded system core for different processor types, to work with industrial bus systems, to set up SCADA system and to setup a database in SCADA system.

Modules of the Course	Hour	Competences To Be Gained
Embedded Systems 1	40/32	To use embedded operational systems
Embedded Systems 2	40/32	To develop embedded system core for different processor types
Industrial Bus Systems	40/32	To work with industrial bus systems
Setting up SCADA Systems	40/32	To setup SCADA systems
Database with SCADA	40/32	To setup database with SCADA system

CONTROL SYSTEMS

A course aiming to teach issues around control systems used in the industry.

The purpose of this course is to provide students with necessary qualifications to control open loops and closed loops, to control PID (Proportional Integral Derivative), to use servo drivers and servo mechanisms.

Modules of the Course	Hour	Competences To Be Gained
Open Loop Control	40/32	To control open loops
Close Loop Control	40/32	To control close loops
PID Control	40/32	To control PIDs
Servo Drivers	40/32	To use servo drivers
Servo Mechanisms	40/32	To use servo mechanisms

DIGITAL SIGNAL PROCESSING

A course aiming to teach issues around digital signal processing.

The purpose of this course is to provide students with necessary qualifications to use digital signal processing circuit.

Modules of the Course	Hour	Competences To Be Gained
Digital Signal Processing1	40/32	To use digital signal processing circuit
Digital Signal Processing2	40/32	

3. ELECTIVE COURSES

Students must take weekly elective courses hours as specified in the chart.

Elective courses that may be taken by the students are determined in cooperation with group teachers and coordinator teachers in line with peculiarities of relevant fields and branches.

Other programs of an elective course, if any, follow a certain order in selection process. The courses that should be delivered before the others are taken into consideration.

Elective courses can be chosen from the elective courses chart or field/branch courses or other fields, as necessary.

ANATOLIAN VOCATIONAL AND ANATOLIAN TECHNICAL HIGH SCHOOLS
INDUSTRIAL AUTOMATION TECHNOLOGIES
COMMON COURSES CHART

COMMON COURSES	CURRICULUM	BOD Decision Date/ No
LANGUAGE AND NARRATION	High school Language and Narration Curriculum applies.	14.07.2005 197
TURKISH LITERATURE	High School Turkish Literature Curriculum applies.	14.07.2005 197
RELIGIOUS CULTURE AND ETHICS	High school Religious Culture and Ethics Curriculum applies.	31.03.2005 16
HISTORY	High school History Curriculum applies.	09.02.1993 / 7, 14.06.2002/272
TURKISH REPUBLIC HISTORY OF REVOLUTIONS AND KEMALISM	High school Turkish Republic History of Revolutions and Kemalism Curriculum applies.	27.04.1981 /76 14.06.2002/272
GEOGRAPHY	High school Geography Curriculum applies.	14.07.2005 198
MATHEMATICS	High school Mathematics Curriculum applies.	14.07.2005 200
PHYSICS	High school Physics Curriculum applies.	01.05.1992 128
CHEMISTRY	High school Chemistry Curriculum applies.	01.05.1992 127
BIOLOGY	High school Biology Curriculum applies.	23.12.1997 169
HEALTH	High school Health Curriculum applies.	19.12.1996 261
PHILOSOPHY	High school Philosophy Curriculum applies.	25.05.1993 259
FOREIGN LANGUAGE	High school Foreign Language Curriculum applies.	10.05.1973 380
FOREIGN LANGUAGE	Anatolian High School Foreign Language Curriculum applies.	01.09.1993/411 02.04.2002/34
PHYSICAL TRAINING	High school Physical Training Curriculum applies.	04.12.1987 232
NATIONAL SECURITY	High school National Security Curriculum applies.	11.03.1998 15
TRAFFIC AND FIRST AID	High school Traffic and First Aid Curriculum applies.	29.01.1992 12
INTRODUCTION AND ORIENTATION	Introduction and Orientation Curriculum developed and implemented under SVET applies. Introductory modules and visual teaching tools (CD, DVD vb.) will be utilized in this course.	13.08.2004 128

Note: *Curricula adopted pursuant to the Board of Education decision No 193 of 14.07.2005 and published in the Communiqués Journal No 2575 are applied in line with the explanations provided in weekly course hours charts.*

ANATOLIAN VOCATIONAL AND ANATOLIAN TECHNICAL HIGH SCHOOLS
INDUSTRIAL AUTOMATION TECHNOLOGIES
COMMON COURSES CHART

COMMON FIELD COURSES	CURRICULUM	BOD DECISION DATE/ NO
INFORMATION AND COMMUNICATION TECHNOLOGY	Information and Communication Technology Curriculum developed and implemented under SVET applies.	27.09.2005 329
VOCATIONAL DEVELOPMENT	Vocational Development Curriculum developed and implemented under SVET applies.	
MATHEMATICS	High school Mathematics Curriculum applies.	14.07.2005 200
GEOMETRY	High school Geometry Curriculum applies.	29.01.1992 192
ANALYTICAL GEOMETRY	High school Analytical Geometry Curriculum applies.	29.01.1992 14
PHYSICS	High school Physics Curriculum applies.	01.05.1992 128
CHEMISTRY	High school Chemistry Curriculum applies.	01.05.1992 127
BIOLOGY	High school Biology Curriculum applies.	23.12.1997 169
BASIC MECHANICS	Basic Mechanics Curriculum developed and implemented under SVET applies.	
BASIC INDUSTRIAL APPLICATIONS	Basic Industrial Applications Curriculum developed and implemented under SVET applies.	
TECHNICAL AND VOCATIONAL DRAWING	Technical and Vocational Drawing Curriculum developed and implemented under SVET applies.	

ANATOLIAN VOCATIONAL AND ANATOLIAN TECHNICAL HIGH SCHOOLS
INDUSTRIAL AUTOMATION TECHNOLOGIES
BRANCH COURSES CHART

BRANCH COURSES	CURRICULUM	BOD DECISION DATE/ NO
MECHANISMS	Mechanisms Curriculum developed and implemented under SVET applies.	
BASIC COMPUTER NETWORKS	Basic Computer Networks Curriculum developed and implemented under SVET applies.	
MODELLING ON COMPUTER	Modelling on Computer Curriculum developed and implemented under SVET applies.	
PNEUMATIC AND HYDRAULIC SYSTEMS	Pneumatic and Hydraulic Systems Curriculum developed and implemented under SVET applies.	
COMPUTERIZED CONTROL	Computerized Control Curriculum developed and implemented under SVET applies.	
SUCCESSIVE CONTROL	Successive Control Curriculum developed and implemented under SVET applies.	
PLANT AUTOMATION	Plant Automation Curriculum developed and implemented under SVET applies.	
AUTOMATIC PRODUCTION	Automatic Production Curriculum developed and implemented under SVET applies.	
SCADA SYSTEMS	SCADA Systems Curriculum developed and implemented under SVET applies.	
TECHNICAL FOREIGN LANGUAGE	Technical Foreign Language Curriculum developed and implemented under SVET applies..	
CIRCUIT ANALYSIS	Circuit Analysis Curriculum developed and implemented under SVET applies.	
INDUSTRIAL MANAGEMENT	Industrial Management Curriculum developed and implemented under SVET applies.	
BASIC PROGRAMMING	Basic Programming Curriculum developed and implemented under SVET applies.	

BASIC COMPUTER NETWORKS AND SERVER SERVICES	Basic Computer Networks and Server Services Curriculum developed and implemented under SVET applies.ir.	
COMPUTERIZED CIRCUIT DESIGN	Computerized Circuit Design Curriculum developed and implemented under SVET applies.	
SENSORS AND SIGNAL PROCESSING	Sensors and Signal Processing Curriculum developed and implemented under SVET applies.	
MICRODETECTION APPLICATIONS	Microdetection Applications Curriculum developed and implemented under SVET applies.	
INTERNET PROGRAMMING AND SAFETY	Internet Programming and Safety Curriculum developed and implemented under SVET applies.	
INDUSTRIAL SYSTEMS	Industrial Systems Curriculum developed and implemented under SVET applies.	
CONTROL SYSTEMS	Control Systems Curriculum developed and implemented under SVET applies.	
DIGITAL SIGNAL PROCESSING	Digital Signal Processing Curriculum developed and implemented under SVET applies.	

ANATOLIAN VOCATIONAL AND ANATOLIAN TECHNICAL HIGH SCHOOLS
INDUSTRIAL AUTOMATION TECHNOLOGIES
ELECTIVE COURSES CHART

ELECTIVE COURSES	CURRICULUM	BOD DECISION DATE/ NO
PAINTING	High school Painting (1, 2, 3) Curriculum applies	10.03.1998 13
MUSIC	High school Music (1, 2, 3) Curriculum applies	16.09.1991 191
PHYSICAL TRAINING	High school Physical Training (2, 3) Curriculum applies	04.12.1987 232
HISTORY	High school History (1, 2) Curriculum applies	14.06.2002/272 09.02.1993/47
MATHEMATICS	High school Mathematics (10, 11, 12) Curriculum applies	14.07.2005 200
GEOGRAPHY	High school Geography (11) Curriculum applies	14.07.2005 198
GEOMETRY	High school Geometry (1, 2) Curriculum applies	29.01.1992 192
ANALYTICAL GEOMETRY	High school Analytical Geometry Curriculum applies	29.01.1992 14
PHYSICS	High school Physics (2, 3) Curriculum applies	01.05.1992 128
CHEMISTRY	High school Chemistry (2, 3) Curriculum applies	01.05.1992 127
BIOLOGY	High school Biology Curriculum applies	23.12.1997 169
PSYCHOLOGY	High school Psychology Curriculum applies.	07.01.1991 7
SOCIOLOGY	High school Sociology Curriculum applies	01.11.1995 353
REASONING	High school Reasoning Curriculum applies	30.04.1998/67 20.10.1993/450
ASTRONOMY AND SPACE SCIENCE	High school Astronomy and Space Science Curriculum applies.	24.04.1992 98
ELECTIVE FOREIGN LANGUAGE	**One of the following languages is selected: German, French, English, Spanish, Italian or Russian** Curriculum to be prepared by group teachers applies. Curriculum will take account of the purposes and explanations provided in High School (2) Foreign Language Curriculum.	13.09.2004 140
DEMOCRACY AND HUMAN RIGHTS	High school Democracy and Human Rights Curriculum applies	
PROJECT	Curriculum to be developed by the	

PREPARATION	group teachers applies.	
DRAMA	High school Drama Curriculum applies	21.04. 2000 58
AESTHETICS	High school Aesthetics Curriculum applies	21.04. 2000 61
KENLORE	High school Kenlore Curriculum applies	23.10.2000 389
CHILDREN'S LITERATURE	High school Children's Literature Curriculum applies	19.12.1996 262
RESEARCH TECHNIQUES	High school Research Techniques Curriculum applies	24.02.1999 7
INTRODUCTION AND TRAINING	Introduction and Orientation Curriculum developed and implemented under SVET applies. Introductory modules and visual learning materials developed under SVET (CD, DVD etc.)will be used in this course	13.08.2004 128

NOT:

- *Purposes and explanations in the curricula adopted pursuant to the Board of Education decision No 193 of 14.07.2005 and published in the Communiqués Journal No 2575 are applied in line with the explanations provided in weekly course hours charts.*
- *Contents of elected cultural courses must be planned as a continuation of common courses, common field courses and branch courses specified in weekly course hours chart.*

Annex 8-1 Standard curriculum of Mechatronic Branch

12

COMMON SKİLLS

SCADA Systems (5)
- Op-Amp
- Open-Loop Control
- Closed-Loop Control
- PID Control

Micro-Controllers(6)
- The basics od microcontrollers
- Programming of microcontrollers

Technical English (2)
- Technical Terms
- Technical Contracts

VOCATİONAL SKİLLS

Factory Automation Workshop (9)
- Network structure of Factory Automation
- Position Control
- Inverter - Servo Interface
- ID Interface

Automatic Manufacturing (8)
- Using CNC with CAM programme
- Assembly and Disassembly of machine Parts
- Control of Flexible Manufacturing Cell
- Conveyors and Grippers

11

COMMON SKİLLS

Sequence Control Workshop (7)
- Control by Relay
- PLC Programming

Computer Control (6)
- Visual Programming Language
- Parallel and Serial Port Control

VOCATİONAL SKİLLS

Pneumatic and Hydraulic Systems (4)
- Pneumatic Systems
- Electro- Pneumatic Systems
- Electro- Hydraulic

Modelling In Computer (CAD) (2)
- Modelling of Machine Parts
- Assembly

Basic Computer Network (3)
- Basic and peer to peer networks

Mechanisms (5)
- Basic Mechanisms
- Electro-Mechanisms

10

BASIC COMMON SKİLLS

Technical Drawing (2)
- Technical Drawing of Mechanics Parts
- Technical Drawing of Electricty and Electronics

Electricty –Electronics Lab. (9)
- DC Circuits
- AC Circuits
- Soldering
- Circuits with Transistors
- Making Power Supply
- Logic Gates

Machine Wokshop (5)
- Measuring and Control
- Tool Machines
- Safety at Work

Selected Lesson (3)
- Basic Programming of C language

9

Common Lectures

Information Technologies (2)
- Hardware
- Wordprocessor
- Spreadsheet

Common Lectures | Common- Basic Skills | Vocational Skills

Annex 8-2 Standard Curriculum of Industrial Control Branch

12

COMMON SKİLLS

Control Systems(5)
- Op-Amp
- Open-Loop Control
- Closed-Loop Control
- PID Control
- Servo Drivers
- Servo Mechanisms

Technical English (2)
- Technical Terms
- Technical Contracts

Pneumatic Systems (3)
- Pneumatic Systems
- Electro- Pneumatic Systems

VOCATİONAL SKİLLS

Internet Programming and Security (6)
- Internet Programming
- Servers
- Control via Network

Industrial Network Systems (5)
- Embeded Systems
- Industrial Bus Systems
- SCADA Software

Micro-Controllers Applications(6)
- The basics od microcontrollers
- Programming of microcontrollers
- Installing systems with microcontrollers

11

COMMON SKİLLS

Sequence Control Workshop (7)
- Control by Relay
- PLC Programming

Computer Control (6)
- Visual Programming Language
- Parallel and Serial Port Control

VOCATİONAL SKİLLS

Sensors and Signal Processing (6)
- Op-Amp
- Semi-Conductors
- Temperature Measuring
- Pressure Measuring
- Level Measuring
- Force-Weight Measuring

Basic Computer Network and Server Services (6)
- Basic and peer to peer networks
- Server Services

Design of Electronics -Circuits (2)
- Design
- Printed Circuit Design

10

BASIC COMMON SKİLLS

Technical Drawing (2)
- Technical Drawing of Mechanics Parts
- Technical Drawing of Electricty and Electronics

Electricty –Electronics Lab. (9)
- DC Circuits
- AC Circuits
- Soldering
- Circuits with Transistors
- Making Power Supply
- Logic Gates

Machine Wokshop (5)
- Measuring and Control
- Tool Machines
- Safety at Work

Selected Lesson (3)
- Basic Programming of C language

9

Common Lectures

Information Technologies (2)
- Hardware
- Wordprocessor
- Spreadsheet

Common Lectures | Common- Basic Skills | Vocational Skills

Annex 9 Curriculum for IAT Branches of Izmir AML

Grade 10

Subjects		Modules	
Temel Mekanik	Basic Mechanics	El Tesviyeciliği 1	Manual Leveling 1
		El Tesviyeciliği 2	Manual Leveling 2
		Temel Frezeleme	Basic Milling
		Temel Tornalama 1	Basic Lathing 1
		Temel Tornalama 2	Basic Lathing 2
Teknik ve Meslek Resim	Technical and Vocational Draft	Teknik Resim	Drafting
		Devre Şemaları Çizimi	Drawing of Circuits Schemes
Temel Endüstri Uygulamaları	Basic Industrial Applications	Doğru Akım Devreleri	Direct Current Circuits
		Alternatif Akım Devreleri	Alternative Current Circuits
		Lehimleme ve Baskı Devre	Soldering and Compression Circuit
		Analog Devre Elemanları	Analogue Circuit Elements
		Transistörlü Devreler	Transistorized Circuits
		Temel Güç Kaynağı Yapımı	Basic Power Supply
		Lojik Devreler 1	Logical Circuits 1
		Lojik Devreler 2	Logical Circuits 2

Grade 11 (Mechatronics Branch)

Subjects		Modules	
Bilgisayarda Modelleme	Modeling on Computers	Bilgisayarda Modelleme 1	Modeling On Computer 1
		Bilgisayarda Modelleme 2	Modeling On Computer 2
Pnömatik ve Hidrolik Sistemler	Pneumatic and Hydraulic Systems	Temel Pnömatik	Basic Pneumatic
		İleri Pnömatik	Advanced Pneumatic
		Elektropnömatik Sistemler	Electro-pneumatic Circuits
		Hidrolik Sistemler	Hydraulic Systems
		Elektrohidrolik Sistemler	Electro-hydraulic Systems
Bilgisayarlı Kontrol	Computerized Control	Bilgisayarlı Kontrol 1	Computerized Control 1
		Bilgisayarlı Kontrol 2	Computerized Control 2
		Bilgisayarlı Kontrol 3	Computerized Control 3
		Bilgisayarlı Kontrol 4	Computerized Control 4
		Bilgisayarlı Kontrol 5	Computerized Control 5
		Bilgisayarlı Kontrol 6	Computerized Control 6

Ardışık Kontrol Teknolojisi	Successive Control (Sequential Control)	Kumanda Devre elemanları	Circuit Elements of Control
		Asenkron Motor Kumanda Teknikleri	Desynchronized Motor Control Techniques
		Asenkron Motorlara yol Vermek	To Initiate Desynchronized Motor
		PLC'ye Hazırlık	Preparation for PLC
		PLC Programlama	PLC Programming
		SFC Programlama	SFC Programming
		PLC'de Panel Kullanımı	Use of Panels on PLC
		PLC'de Haberleşme	Communication on PLC
		PLC İle Sistem Tasarımı	System Planning on PLC
		PLC'ye Giriş	Introduction to PLC
		PLC Programlama Teknikleri	Techniques of PLC Programming
		Operatör Panelleri	Operator Panels
		PLC ile Motor Kontrolü	Motor Control with PLC
		PLC ile Ünite Kontrolü	Unit Control with PLC
Temel bilgisayar Ağları	Basic Computer Network	Temel Bilgisayar Ağları 1	Basic Computer Networks 1
		Temel Bilgisayar Ağları 2	Basic Computer Networks 2
		Temel Bilgisayar Ağları 3	Basic Computer Networks 3
Mekanizmalar	Mechanisms	Mekanizma Tekniği 1	Mechanism Technique 1
		Mekanizma Tekniği 2	Mechanism Technique 2
		Mekanizma Tekniği 3	Mechanism Technique 3
		Mekanizma Tekniği 4	Mechanism Technique 4
		Mekanizma Tekniği 5	Mechanism Technique 5

Grade 11 (Industrial Control Branch)

Subjects		Modules	
Algılayıcılar ve Sinyal İş leme	Sensors and Signal Recording	Anahtarlama Elemanları	Switching Elements
		Osilatörler	Oscillators
		İşlemsel Yükselteçler	Operational Amplifiers
		Sıcaklık Ölçümü	Measurement of Heat
		Kuvvet, Ağırlık ve Basınç Ölçümü	Force, Mass and Pressure Measurement
		Seviye Ölçümü	Level Measurement
		Akış Ölçümü	Flow Measurement
Bilgisayarlı Kontrol	Computerized Control	Bilgisayarlı Kontrol 1	Computerized Control 1
		Bilgisayarlı Kontrol 2	Computerized Control 2
		Bilgisayarlı Kontrol 3	Computerized Control 3
		Bilgisayarlı Kontrol 4	Computerized Control 4
		Bilgisayarlı Kontrol 5	Computerized Control 5
		Bilgisayarlı Kontrol 6	Computerized Control 6

Ardışık Kontrol Teknolojisi	Successive Control (Sequential Control)	Kumanda Devre elemanları	Control Circuit Elements
		Asenkron Motor Kumanda Teknikleri	Synchronized Motor Control Techniques
		Asenkron Motorlara yol Vermek	To Initiate Synchronized Motors
		PLC'ye Hazırlık	Preparation to PLC
		PLC Programlama	PLC Programming
		SFC Programlama	SFC Programming
		PLC'de Panel Kullanımı	Panel Using in PLC
		PLC'de Haberleşme	Communication in PLC
		PLC İle Sistem Tasarımı	System Design with PLC
		PLC'ye Giriş	Introduction to PLC
		PLC Programlama Teknikleri	PLC Programming Techniques
		Operatör Panelleri	Operator Panels
		PLC ile Motor Kontrolü	Motor Control with PLC
		PLC ile Ünite Kontrolü	Unit Control with PLC
Temel Bilgisayar Ağları ve Sunucu Servisleri	Basic Computer Networks and Server Services	Temel Bilgisayar Ağları 1	Basic Computer Networks 1
		Temel Bilgisayar Ağları 2	Basic Computer Networks 2
		Temel Bilgisayar Ağları 3	Basic Computer Networks 3
		Sunucu Servisleri 1	Server Services 1
		Sunucu Servisleri 2	Server Services 2
		Sunucu Servisleri 3	Server Services 3
		Sunucu Servisleri 4	Server Services 4
Bilgisayarlı Devre Tasarımı	Computerized Circuit Designs	Bilgisayarlı Devre Tasarımı	Computerized Circuit Design
		Bilgisayarlı Baskı Devre Çizimi	Computerized Press Circuit Drawing

Grade 12 (Mechatronics Branch)

Subjects		Modules	
SCADA sistemleri	SCADA Systems	İşlemsel Yükselteçler	Operational Amplifiers
		Açık Çevrim Kontrolü	Open Cycle Control
		Kapalı Çevrim Kontrolü	Close Cycle Control
		SCADA Sistemleri 1	SCADA Systems 1
		SCADA Sistemleri 2	SCADA Systems 2
Mikrodenetleyici Uygulamaları	Microdetector Applications	Mikrodenetleyici 1	Microdetector 1
		Mikrodenetleyici 2	Microdetector 2
		Mikrodenetleyici 3	Microdetector 3
		Mikrodenetleyici 4	Microdetector 4
		Mikrodenetleyici 5	Microdetector 5
		Mikrodenetleyici 6	Microdetector 6

Otomatik Üretim	Automatic Production	Otomatik Üretim 1	Automatic Production 1
		Otomatik Üretim 2	Automatic Production 2
		Otomatik Üretim 3	Automatic Production 3
		Otomatik Üretim 4	Automatic Production 4
		Otomatik Üretim 5	Automatic Production 5
		Otomatik Üretim 6	Automatic Production 6
		Otomatik Üretim 7	Automatic Production 7
		Otomatik Üretim 8	Automatic Production 8
		Otomatik Üretim 9	Automatic Production 9
Fabrika Otomasyon	Plant Automation	Fabrika Otomasyon 1	Plant Automation 1
		Fabrika Otomasyon 2	Plant Automation 2
		Fabrika Otomasyon 3	Plant Automation 3
		Fabrika Otomasyon 4	Plant Automation 4
		Fabrika Otomasyon 5	Plant Automation 5
		Fabrika Otomasyon 6	Plant Automation 6
		Fabrika Otomasyon 7	Plant Automation 7
		Fabrika Otomasyon 8	Plant Automation 8
		Fabrika Otomasyon 9	Plant Automation 9
Teknik İngilizce	Technical English	End. Otm. Teknik Terimleri	
		End. Otm. Yayınları	

Grade 12 (Industrial Control Branch)

Subjects		Modules	
Mikrodenetleyici Uygulamaları	Microdetector Applications	Mikrodenetleyici 1	Microdetector 1
		Mikrodenetleyici 2	Microdetector 2
		Mikrodenetleyici 3	Microdetector 3
		Mikrodenetleyici 4	Microdetector 4
		Mikrodenetleyici 5	Microdetector 5
		Mikrodenetleyici 6	Microdetector 6
		Mikrodenetleyici Uygu. 1	Microdetector Applications 1
		Mikrodenetleyici Uygu. 2	Microdetector Applications 2
		Mikrodenetleyici Uygu. 3	Microdetector Applications 3
İnternet Programcılığı ve Güvenliği	Internet Programming and Security	Programlama	Programming
		Veritabanı	Database
		İnternet Programcılığı Uygulamaları	Internet Programming Applications
		İnternet Güvenliği	Internet Security
		Uzaktan Erişim	Remote Reach
		Elektronik Posta Sunucusu	E-mail Servers

Endüstriyel Sistemler	Industrial Systems	Gömülü Sistemler 1	Buried Systems 1
		Gömülü Sistemler 2	Buried Systems 2
		Endüstriyel Bus Sistemleri	Industrial Bus Systems
		SCADA Sistemi Kurma	Establishment of SCADA Systems
		SCADA ile Veritabanı	Database with SCADA
Denetim Sistemleri	Inspection Systems	Açık Çevrim Kontrolü	Open Cycle Control
		Kapalı Çevrim Kontrolü	Close Cycle Control
		PID Kontrolü	PID Control
		Servo Sürücüler	Servo Drivers
		Servo Mekanizmalar	Servo Mechanisms
Pnömatik Sistemler	Pneumatic Systems	Temel Pnömatik	Basic Pneumatic
		İleri Pnömatik	Advanced Pneumatic
		Elektropnömatik Sistemler	Electro-pneumatic Circuits
Teknik İngilizce	Technical English	End. Otm. Teknik Terimleri	
		End. Otm. Yayınları	

Source: Izmir AML, January 2007

Introducing themodules developed by other related fields

Annex10 Document of MoNE for Establishment of the Teacher Training Center

TURKISH REPUBLIC
MINISTRY OF NATIONAL EDUCATION
GENERAL DIRECTORATE OF TECHNICAL EDUCATION FOR MALES

No : B.08.0.ETÖ.0.10.03.03./10/235 22/01/2007
Subject: Teachers' Training Center founded under İzmir Mahzar Zorlu Anatolian Technical School

TO THE ATTENTION OF MINISTRY

Ref: **a)** Project Protocol signed between our Ministry and Japan International Agency (JICA) on October 12, 2000 on founding the departments of Industrial Automation Technologies under Anatolian Technical High Schools.

b) Confirmation No: 138 dated on January 9, 2004 of General Directorate of Technical Education for Males.

While the activities of furnishing industrial technical schools affiliated with our Ministry with modern equipment and materials depended on new technologies are still going on, it is known by you that new schools and departments are underway with a view to train technical manpower in vocational areas that play a predominant role in our Turkish economy.

Within this framework, Industrial Automation Technologies Departments were established in İzmir Mahzar Zorlu and Konya Adil Karaağaç Anatolian Technical high schools displaying activities as affiliated with our Ministry and for the purpose of furnishing these departments with international standards, for these teachers' technical trainings abroad to provide education for them in these areas, for expert Japanese consultants to work in our country in these fields, and for developing educational programs, it is known by you that the reference (a) concerning signing the protocol and pilot project applications being completed in 2 schools mentioned above in 2006 shall serve as a basis for the application of the project within the framework of technical cooperation between Turkish Republic and Japanese Governments.

Within the scope of this project, 25 technical teachers completed their 6-9 month-period trainings in Japan and returned home.

On account of our Turkish industry attempting to integrate with the world and its progress day by day in this direction within this framework and the increasing need for qualified intermediary manpower especially in automation area, it was approved by our Ministry through reference (b) to open up new more Industrial Automation Technologies Departments under 20 industrial technical schools in 20 provinces with industrial concentration.

One of the most important points is the teacher training activities to obtain the target productivity from the said departments that are furnished through expensive investments made and funded by our Ministry.

In our country in the field of "Industrial Automation Technologies" as there were no educational institutions with associate and licence degree programs to educate the teachers of workshop and vocational courses, technicians and engineers, it is known by you that a teachers' training center was built under İzmir Mahzar Zorlu Anatolian Technical high school for the purpose of meeting the need for the teachers to be employed in generalization- oriented schools.

In this above-mentioned center it was planned to educate the teachers from Middle East Countries and Turkic countries with the support of Japanese Government as well as to meet the need for the teachers in Turkey.

TURKISH REPUBLIC
MINISTRY OF NATIONAL EDUCATION
GENERAL DIRECTORATE OF TECHNICAL EDUCATION FOR MALES

No : B.08.0.ETÖ.0.10.03.03./10/235 22/01/2007
Subject: Teachers' Training Center founded under İzmir Mahzar Zorlu Anatolian Technical School

In parallel with those developments;

For the training of intermediary staff that know and apply the new technology in the field of Industrial Automation Technologies, through the acquisition of knowledge to a large extent on the said subject and the utilization from Japan's experience and possibilities with high-technology, the **" Project of the Development of Industrial Automation Technologies Department under İzmir Mahzar Zorlu Anatolian Technical Schools and the Foundation of Teachers' Training Center"** was prepared by General Directorate of Technical Education for Males under Our Ministry so as to be applied depending on the cooperation agreement between Turkish and Japanese Governments and presented to Japanese International Cooperation Agency (JICA), and subsequently admitted.

I kindly submit and put forward this for your confirmation that the said training center should be used with a view to update in pursuance of technological progress the teachers and administrative staff's knowledge and experience working in technical schools and institutions as well as to train the teachers assigned / or to be assigned in generalization-oriented schools of industrial automation technologies department displaying activity under our General Directorate.

Signature
Hüseyin ACIR
Deputy to General Director

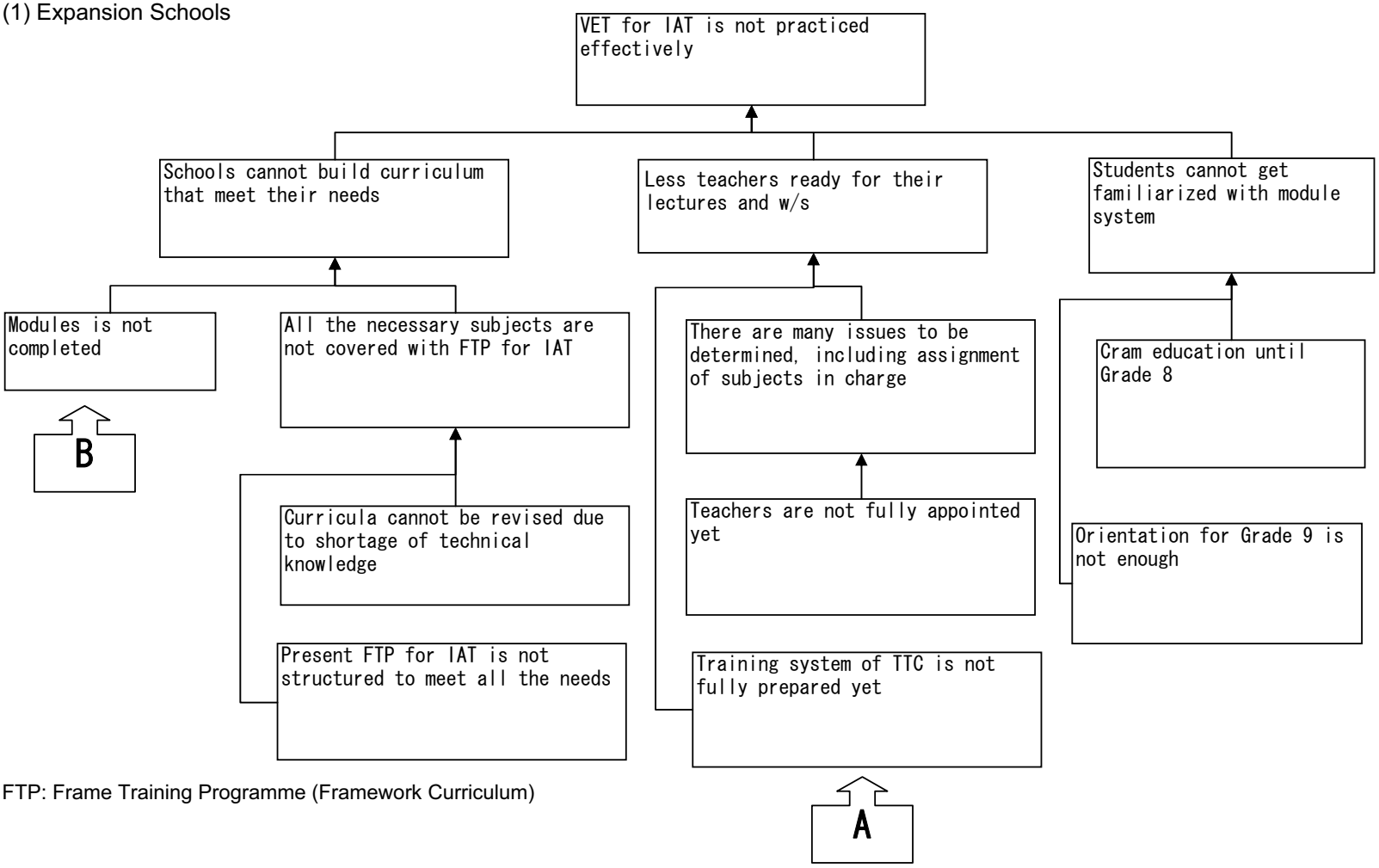
I Extend With My Approval

17/01/2007
Signature
Prof. Dr. Necat BİRİNCİ
Undersecretary

CONFIRMATION
…../ 01 / 2007
Associate Prof. Hüseyin ÇELİK
Minister of National Education

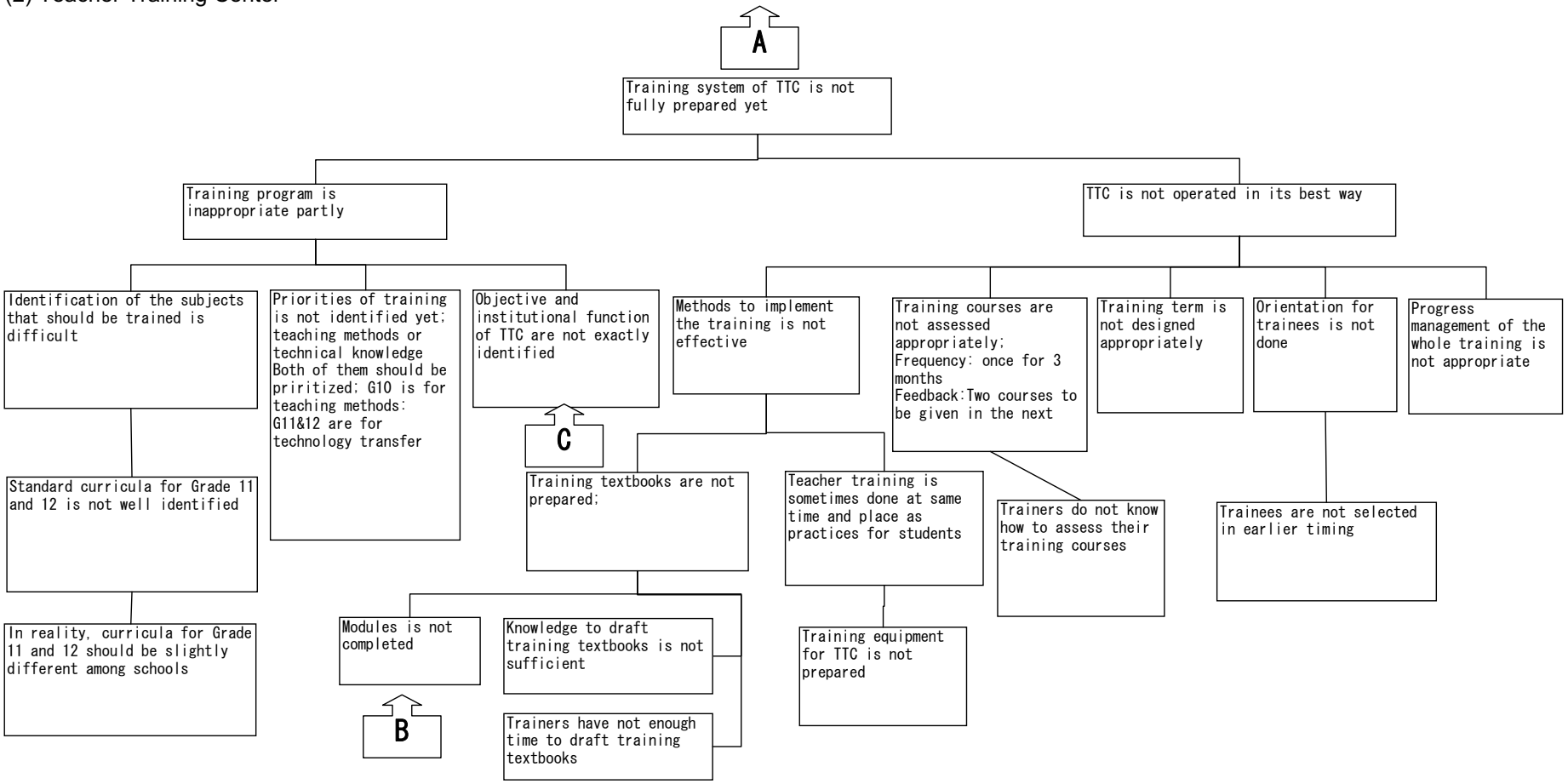
Annex 11 Problem Trees

(1) Expansion Schools

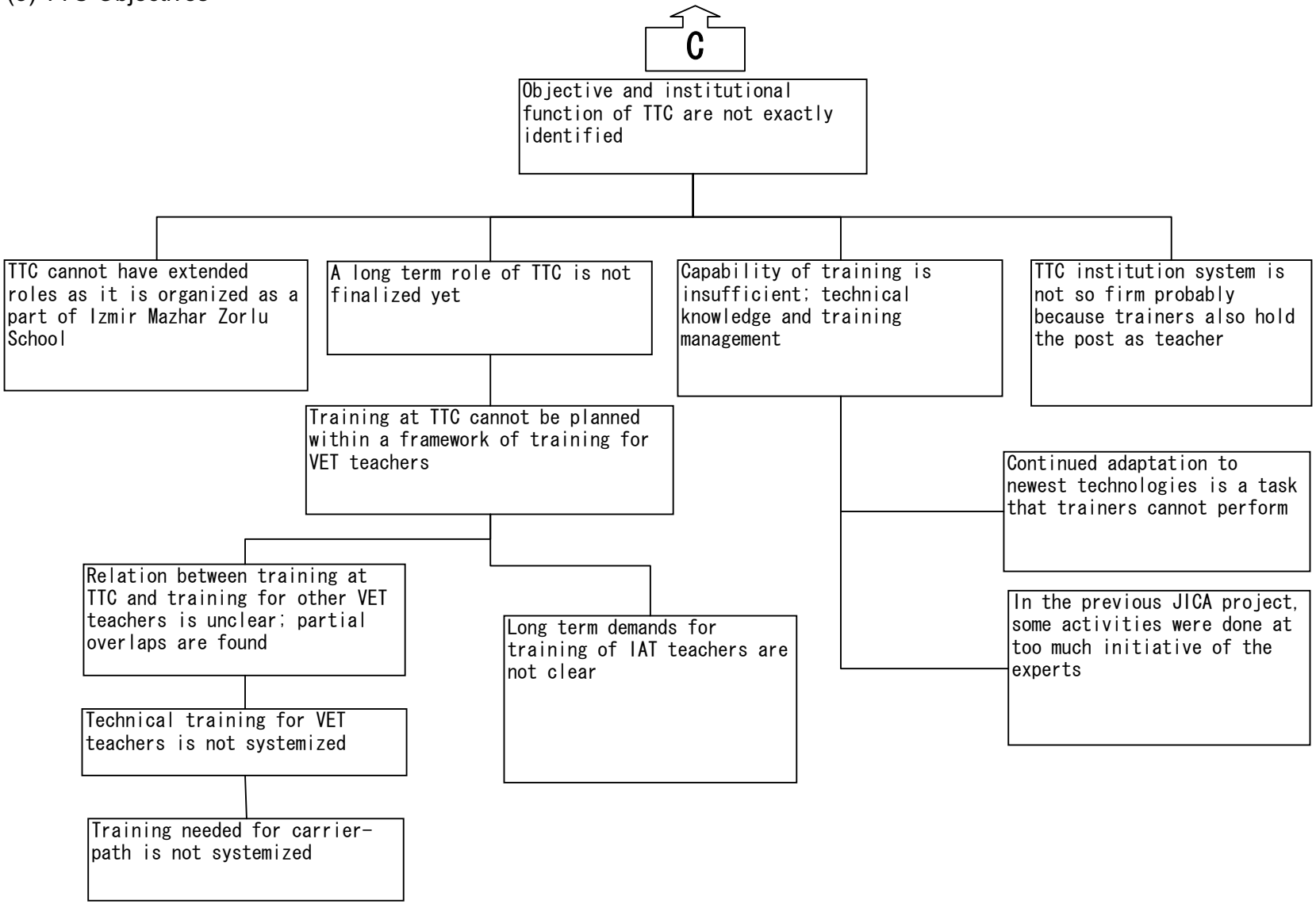


FTP: Frame Training Programme (Framework Curriculum)

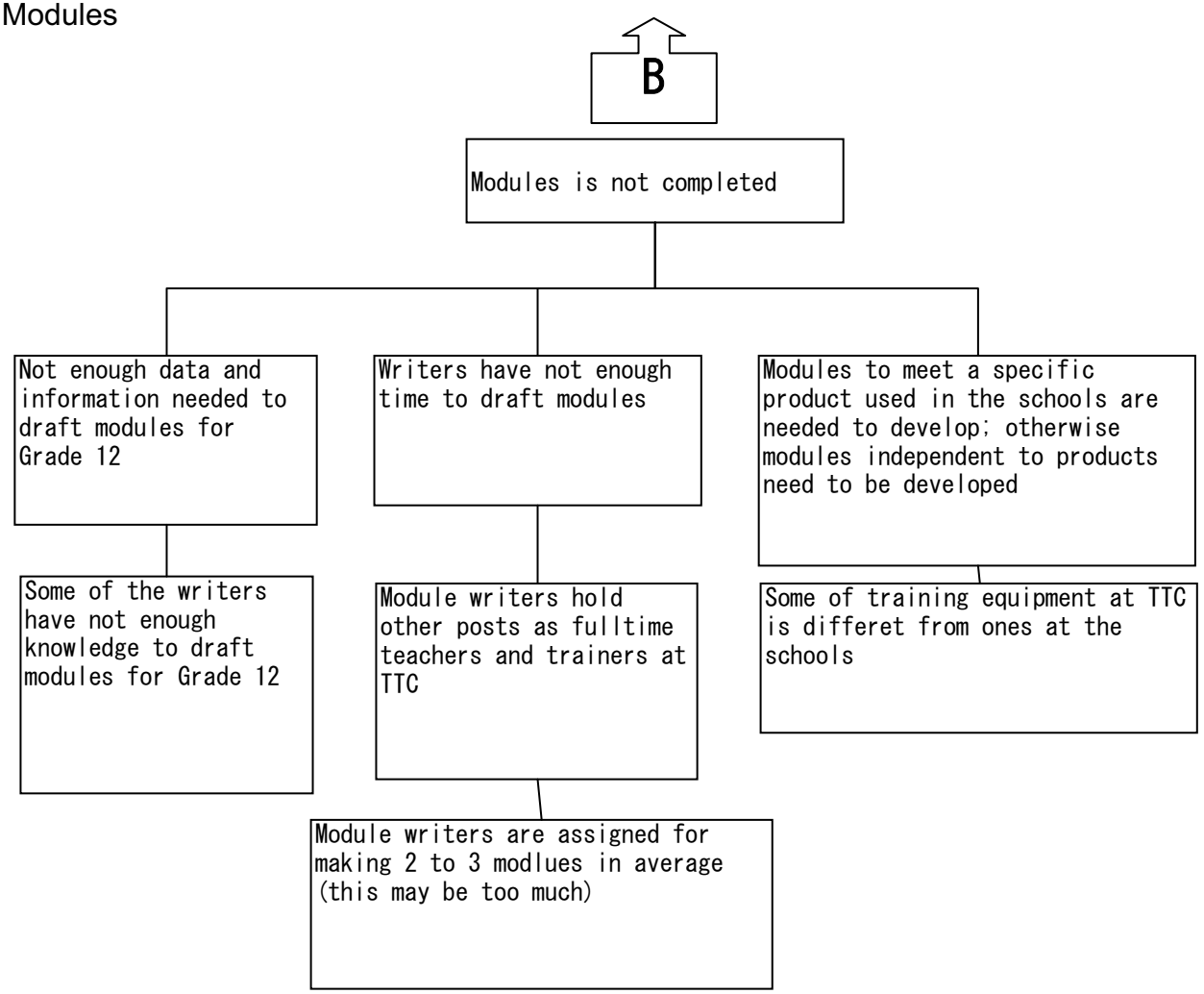
(2) Teacher Training Center



(3) TTC Objectives



(4) Modules


B
Modules is not completed
Not enough data and information needed to draft modules for Grade 12
Writers have not enough time to draft modules
Modules to meet a specific product used in the schools are needed to develop; otherwise modules independent to products need to be developed
Some of the writers have not enough knowledge to draft modules for Grade 12
Module writers hold other posts as fulltime teachers and trainers at TTC
Some of training equipment at TTC is differet from ones at the schools
Module writers are assigned for making 2 to 3 modlues in average (this may be too much)

Annex 12 Terms of Reference (TOR)

The Director General of the GDTVE

The Director General of the GDTVE as the Project Director shall bear the overall responsible for the implementation and management of the SPREAD in consultation with the Chief Advisor. Duties of the Project Director include, but not limited to, the followings;

1. To supervise the overall progress of the project plan.
2. To assure timely input to the Project (budgets, equipment, human resource, and etc).
3. To supervise the teacher training program and seminar.
4. To decide long term strategy of the TTC.
5. To represent the SPREAD at the JCC as a chair.
6. To liaison with the JICA Turkey Office.
7. To establish effective linkages and coordinating mechanism between the SPREAD and the other related organizations.

The School Principal of the Izmir Mazhar Zorulu School

Under the supervision of the Director General of the GDTVE, the school principal of Izmir school as the Project Manager shall be responsible for the managerial and technical matters of the SPREAD in consultation with the Chief Advisor. Duties of the Project Director include, but not limited to, the followings;

1. To arrange the organization of the TTC
2. To supervise the Turkish project counterparts and other staff of the TTC.
3. To assure timely input of the Project (budgets, equipment, human resource, etc).
4. To formulate and update the Plans of Operation.
5. To organize training courses for the expansion schools and seminars for other VET schools involved.
6. To ensure on-time submission of module textbooks and teacher training textbooks.
7. To evaluate the teacher training courses and seminar at the TTC.
8. To develop long term strategy of the TTC.
9. To disseminate the project information to the public.
10. To prepare progress reports for the JCC.
11. To establish effective linkages and coordinating mechanism with the GDTVE and other agencies operating relevant projects.

Lectures of the TTC

Under the supervision of the Project Director and Project Manager, the lectures as the Project Counterparts of the TTC shall be responsible for implementing the project activities of the SPREAD in consultation with the Chief Advisor and Experts. Duties of the Project Counterparts include, but not limited to, the followings;

1. To propose the detailed working plans for the PO.
2. To validate the OVI.
3. To review the ongoing teacher training courses at the TTC.
4. To conduct the study on needs of teacher training for IAT in the expansion schools as a baseline study.
5. To draft the mid term teacher training program.
6. To examine the purpose of teacher training and design the teacher training courses.
7. To design the seminars on the management of the IAT department.
8. To design the summer seminars for the adjacent departments in other VET schools.
9. To prepare teacher training textbooks.
10. To conduct the teacher training courses and seminars.
11. To develop methods and conduct evaluation for the teacher training courses.
12. To develop strategies for long term strategy of the TTC.

Chief Advisor/Center Management (JICA)

The Chief Advisor assists the Project Manager on the implementation and management of the SPREAD. The Chief Advisor's such assistance include, but not limited to, the followings;

1. To review the progress of the project plan.
2. To advice on the center management of the TTC.
3. To validate the OVI.
4. To review the ongoing teacher training courses at the TTC.
5. To propose the mid term teacher training program.
6. To conduct the study on needs of teacher training for IAT in the expansion schools as a baseline study.
7. To design the teacher training courses for the IAT departments in the expansion schools.
8. To design the summer seminars for the adjacent departments in other VET schools.
9. To design the seminars on the management of the IAT department.
10. To prepare teacher training textbooks.
11. To conduct the teacher training courses and seminars.
12. To develop methods and conduct evaluation for the teacher training courses.
13. To develop long term strategy of the TTC.

Project Coordinator/Teacher Training Management (JICA)

The project coordinator assists the Project Manager with the Chief Advisor on the implementation and management of the SPREAD. The project coordinator's such assistance include, but not limited to, the followings;

1. To execute and coordinate the project activities of the SPREAD.
2. To manage the operational budget of the SPREAD allocated by JICA.
3. To manage the procurement of the equipment provided by JICA.
4. To disseminate the project information to the public.
5. To validate the OVI.
6. To develop long term strategy of the TTC.
7. To conduct coordination with related organizations.

Expert in the specific technical fields (JICA)

The Experts in the specific technical fields advise their counterparts in the TTC in the fields of their expertise so as to assist the project activities of the SPREAD. The Experts assist the project counterparts especially in following tasks;

1. To propose the detailed working plans for the PO.
2. To validate the OVI.
3. To review the ongoing teacher training courses at the TTC.
4. To propose the mid term teacher training program.
5. To conduct the study on needs of teacher training for IAT in the expansion schools as a baseline study.
6. To design the teacher training courses.
7. To design the seminars on the management of the IAT department.
8. To design the summer seminars for the adjacent departments in other VET schools.
9. To prepare teacher training textbooks.
10. To observe the teacher training courses and seminars by the TTC lectures and provide necessary advice.
11. To develop methods and conduct evaluation for the teacher training courses.
12. To develop strategies for long term strategy of the TTC.

3. 事業事前評価表

事業事前評価表（技術協力プロジェクト）

作成日：平成 19 年 4 月 16 日

担当部：人間開発部 技術教育チーム

１．案件名 トルコ自動制御技術教育普及計画強化プロジェクト The Project on Strengthening the Program of Expanding Industrial Automation Technologies Department (SPREAD)
２．協力概要 （１） プロジェクト目標とアウトプットを中心とした概要の記述 本プロジェクトは、アナトリア職業高校[1]イズミール校の付属機関として設立されている教員研修センター（Teacher Training Center: TTC）の教員研修実施体制を確立することを目的として、教員研修計画の立案及び実施、評価に加えて、TTC の長期運営計画を策定する。 また、本プロジェクトは、TTC の教員研修実施体制を確立することにより、他のアナトリア職業高校 20 校への自動制御学科の普及を促進し、トルコ製造業部門における制御技能者の人材需要を満たすことに寄与する。 （２） 協力期間 2007 年 8 月から 2010 年 9 月まで （３） 協力総額（日本側） 約 3.4 億円 （４） 協力相手先機関 トルコ共和国　国民教育省　産業技術・職業教育総局長 （５） 国内協力機関 未定 （６） 裨益対象者及び規模等 直接裨益者：アナトリア職業高校イズミール校教員研修センター 間接裨益者：普及校[2]教員 300 名、夏季セミナー参加教員 普及校自動制御学科学生[3] 企業（製造業部門）
３．協力の必要性・位置付け （１） 現状及び問題点 トルコ経済は、2001 年に経済危機のためマイナス成長を記録したものの、1990 年以降、成長を維持している（2004 年の GDP 年間成長率は 9.9%）。トルコ国民経済において、製造業

[1] アナトリア職業高校は、熟練技術者を育成するための 4 年制の高校（中等教育課程）であり、外国語（英語）教育が重視されている。トルコ国内に 134 校ある。

[2] トルコ国民教育省はアナトリア職業高校 20 校に自動制御学科を新設している。以下、自動制御学科が新たに設けられるアナトリア職業高校 20 校を「普及校」と呼ぶ。

[3] 普及校 1 校あたり自動制御学科の学生は 1 学年約 60 名。

は約 4 分の 1 を占め、その割合は今後さらに高まるものと考えられる（製造業の GDP に占める割合は、1990 年 22.4%、1995 年 23.8%、2000 年 23.8%、2004 年 25.1%）。トルコ製造業の成長の一方で、企業は制御技術に関する社員の技能水準に満足していないことが各種調査から明らかとなっている[4]。また、製造業部門では生産性向上のため、産業オートメーション化が今後進められ、制御技術を備えた人材の需要は今後高まるものと考えられる。

トルコ国民教育省は、制御技術を備えた人材育成のため、日本の支援により 2001 年から 2006 年にかけて実施された「自動制御技術教育改善計画」（技術協力プロジェクト）において、アナトリア職業高校イズミール校及びコンヤ校に自動制御学科を設立した。自動制御学科のカリキュラムは、メカトロニクスとコンピュータ・ネットワークを主要分野として、各種制御技術の体系化を図ったものである。トルコ国民教育省は、「自動制御技術教育改善計画」の成果を受けて、トルコ国内各地のアナトリア職業高校 20 校に自動制御学科を設けるとともに、イズミール校の付属施設として教員研修センター（TTC）を設立し、教員研修を実施する等、自動制御技術の職業教育訓練の普及を図っている[5]。

イズミール校 TTC は 2006 年に教員研修を開始したが、研修用教材の未作成、研修コースの運営体制の未整備、研修コースの評価手法の未整備等の課題が挙げられている。

（２） トルコ政府の国家政策上の位置づけ

トルコ政府は、中期開発計画（2007 年～2009 年）で「人的資源の開発」を主要目標の一つに掲げ、雇用機会の増大、経済の地域間格差の緩和、教育セクターの開発といった様々な見地から、人的資源の開発を進めている。産業技術教育・職業訓練（Technical and Vocational Education and Training: TVET）分野では、①人材需要を満たすためにモジュール教育への転換を促進、②教育制度と労働市場の協力関係の強化、③若年層の雇用を高めるための情報技術を備えた人材開発、が進められている。

（３） 我が国援助政策との関連、国別事業実施計画上の位置付け

JICA はトルコ国別事業実施計画において「中進国に向けた人材育成」を援助重点分野の 1 つとして、「技術教育改善プログラム」を実施している。同プログラムは、産業界で求められる中堅技術者を育成するため、トルコの TVET 改善を目的としたものである。2001 年から 2006 年にかけて、技術協力プロジェクト「自動制御技術教育改善計画」が実施され、アナトリア職業高校イズミール校及びコンヤ校に普及モデルとしての自動制御学科が新設された。本プロジェクトは、前プロジェクトで設立された自動制御学科を他のアナトリア職業高校 20 校に普及することを目的として、TTC の教員研修実施体制を確立する。

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[4] トルコ金属製品製造業者組合（MESS）による人材需要調査（2004 年）、中小企業開発機構（KOSGEB）による人材需要調査（2005 年）、EU の支援を受け実施されている職業教育訓練制度強化計画（MEGEP）による人材需要調査（2005 年）において、制御技術を備えた人材の不足が指摘されている。

[5] 国民教育省が研修予算を配分し、イズミール校 TTC が研修プログラムを計画及び実施する。TTC は、イズミール校の付属機関の 1 つであることから、同校の校長及び副校長が運営管理を行う。

４．協力の枠組み

（１） 協力の目標（アウトカム）

１）協力終了時の達成目標（プロジェクト目標）

TTC における教員研修システムが確立される。

・指標・目標値[6]

① 教員研修コースに関する指標

- 研修受講者のうち、XX%以上が自動制御学科の授業に TTC の研修が実際に役立つと評価する。
- 受講生の XX%が研修コースを修了する。
- 研修修了試験の平均点

② センター運営に関する指標

- 教員研修コースの運営手順が定められる。
- 研修コースの計画回数に対する実施回数

③ TTC 長期運営計画に関する指標

・ TTC 長期運営計画が国民教育省により認められる。

２）協力終了後に達成が期待される目標（上位目標）

普及校において自動制御技術の職業教育訓練が有効に実施される。

・指標・目標値

年間 XX 人の学生が自動制御学科を卒業する。

（２） 成果（アウトプット）と活動

成果１　教員研修計画が作成される。

活動：

1-1 普及校の自動制御学科の現状について、ベースライン調査が行われる。

1-2 TTC の運営体制が見直される。

1-3 現行の中期教員研修計画(2006-2011)が改訂される。

1-4 モジュール・テキストが作成される。

1-5 教員研修コースが設定される。

1-6 教員研修用テキストが作成される。

成果 2　教員研修コースが実施される。

活動：

2-1 教員研修センターに実習機材が整備される。

2-2 研修受講者に対する事前説明が実施される。

2-3 教員研修コースが実施される。

2-4 自動制御学科の運営に関するセミナーが実施される。

成果 3　教員研修コースの評価が行われる。

[6] 指標中の数値については、ベースライン調査の結果をふまえ、第一回合同調整会議において決定する。

活動：

3-1 教員研修コースの評価基準及び評価手法が設定される。

3-2 教員研修コースに対する評価が適切に実施される。

3-3 普及校における自動制御学科の授業及び運営に関し、モニタリングが行われる。

3-4 教員研修コースおよび研修テキストの見直しが行われる。

成果 4　TTC の計画策定機能が強化される。

活動：

4-1 TTC の中長期的役割が特定される。

4-2 TTC の長期運営計画が作成される。

（3） 投入（インプット）

① 日本側（総額 3.4 億円）

専門家派遣、供与機材、研修員受け入れ、在外事業強化経費

② トルコ共和国側（総額 2.5 億円）

カウンターパート人件費、施設・土地手配、研修実施経費 等

（4） 外部要因（満たされるべき外部条件）

① 前提条件

TTC の運営予算が適切に配分される。

カウンターパートが所要人数配属される。

② 成果達成のための外部条件

自動制御学科の教員が適時配置される。

③ プロジェクト目標達成のための外部条件

大半のカウンターパートが異動しない。

④ 上位目標達成のための外部条件

自動制御学科への入学者数が大幅に減少しない。

5．評価 5 項目による評価結果

（1） 妥当性

本プロジェクトの妥当性は以下の点から高いと考えられる。

- トルコ政府の中期開発計画(2007～2009 年)において、人的資源の開発を通じた雇用機会の増大は中期開発計画の主要部分として明確に位置付けられている。
- 製造業部門の人材ニーズに関する各種調査により、制御技術を備えた人材の不足が指摘されていることから、自動制御学科の教員研修を行う本プロジェクトは、トルコ製造業の人材ニーズに合致したものといえる。
- TTC は 2006 年より教員研修を実施しているものの、研修用テキストの未作成、研修コースの運営体制の未整備、研修コースの評価手法の未整備等の問題点が挙げられているため、本プロジェクトにより TTC の研修実施体制を確立することは、ターゲットグループ

である TTC 研修講師のニーズに合致している。

・ 本プロジェクトは、JICA 国別事業実施計画の援助重点分野「中進国にむけた人材育成」に位置づけられる。

（2） 有効性

本プロジェクトは、以下の理由から有効性が見込まれる。

・ 本プロジェクトは TTC における研修システム確立をプロジェクト目標としているが、同目標に関する指標として、教員研修コースに関する指標の他、センター運営に関する指標、長期運営計画に関する指標が設けられているため、プロジェクト目標は明確に設定されている。

・ 本プロジェクトは、教員研修計画の作成及び実施、評価を通じて、センター研修実施体制を確立する他、センター長期運営計画の作成を通じて、センター計画策定機能を強化することから、プロジェクト目標を達成するために十分なアウトプットが定められている。

（3） 効率性

本プロジェクトは、以下の理由から効率的実施が見込まれる。

・ TTC 建設及び機材調達、普及校における自動制御学科の機材調達は、トルコ政府の自国予算で進められており、また研修受講者の旅費等、研修実施経費は同じくトルコ政府の自国予算で賄われているため、プロジェクト活動のためのトルコ側の投入は適切に行われると見込まれる。

・ 本プロジェクトで配置されるカウンターパートは、前プロジェクトにおいて自動制御技術に関する技術移転を日本人専門家から受けているため、前プロジェクトよりも少ない日本側の投入でプロジェクト活動の実施が可能と見込まれる。

・ 国民教育省により、普及校自動制御学科の教員は必要人数雇用されているため、成果達成のための外部条件「自動制御学科の教員が適時配置される」は満たされる見込みである。

（4） インパクト

本プロジェクトのインパクトは、以下のとおり予測される。

・ 本プロジェクトは、普及校の自動制御学科教員約 300 名を対象に教員研修を実施することを主な目的としているが、自動制御学科の隣接学科である機械学科、電気学科、コンピュータ学科等の教員を対象とした短期セミナーも行う[7]。

・ トルコは、イスタンブール、イズミール等の大都市を有し、EU 諸国との結びつきが強く商工業の発展が著しい西部地域と、山岳地帯で経済開発から取り残された東部地域との間で大きな経済格差がある。本プロジェクトは、東部地域を含め、トルコ全国から選定された普及校 20 校における自動制御学科設立を支援することから、トルコ国内の地域間

[7] 隣接学科の教員の内訳は次のとおり。電気・電子学科 5,548 名、コンピュータ学科 1,964 名、機械学科 2,591 名（国民教育省　産業技術教育・職業訓練総局）。

格差是正にも貢献するものと見込まれる。

（5） 自立発展性

本プロジェクトの自立発展性は、以下の理由から高いと考えられる。

- トルコ国民教育省は自国予算で TTC 建設、普及校における自動制御学科の機材調達を進め、2006 年に教員研修を独自に開始していることから、同省は本プロジェクトに強いイニシアティブを有している。
- 本プロジェクトにおいて、日本人専門家は、モジュール・テキスト及び教員研修用テキスト作成及びセンター運営に関する助言等、トルコ側によるプロジェクト活動の側面支援を行うため、トルコ側のオーナーシップは確保されている。

６．貧困・ジェンダー・環境等への配慮

トルコは、イスタンブール、イズミール等の大都市を有し、EU 諸国との結びつきが強く商工業の発展が著しい西部地域と、山岳地帯で経済開発から取り残された東部地域との間で大きな経済格差がある。本プロジェクトは、東部地域を含め、トルコ全国から選定された普及校 20 校における自動制御学科設立を支援することから、トルコ国内の地域間格差是正に配慮したものといえる。

また、アナトリア職業高校イズミール校の自動制御学科教員のうち、2 名が女性であるが、プロジェクトにおける研修講師の選定では、ジェンダーバランスに配慮することとする。

７．過去の類似案件からの教訓の活用

前プロジェクト「自動制御技術改善計画（2006 年 4 月終了）では、自動制御学科の教科書が開発されたが、教科書作成時の作業負荷が大きなものとなったため、同作業負荷への配慮が必要との教訓が挙げられた。本プロジェクトはモジュール・テキスト及び教員研修用テキストの作成を活動に含んでいるが、モジュール・テキスト作成は既にカウンターパートによって着手されているため、日本人専門家は必要な助言を行う。また、教員研修用テキストは、前プロジェクトで開発された教科書等、既存の文献資料を活用しつつ、作成することとする。

８．今後の評価計画

2009 年 2 月　中間評価調査

2010 年 2 月　終了時評価調査

プロジェクト・ドキュメント
トルコ自動制御技術教育普及計画強化プロジェクト
（第１版）

2007 年 5 月

注）本ドキュメントは、トルコ共和国政府関係当局と JICA の合同で作成された。本ドキュメントは、プロジェクトの背景及び基本計画を示したものであり、プロジェクト活動の進捗に伴い、必要に応じて適宜見直される。

目　　次

第１章　序

1990 年代以降、トルコの国民経済は急成長を続けている。1990 年代は、第一次湾岸戦争、高インフレ、ロシアの政治経済危機などにもかかわらず、GDP の年間成長は平均 3%を越えた。2001 年には大きな経済危機がありマイナス成長となったが、その後は 6%（2003 年）から 9%（2004 年）と GDP の成長が維持されている。製造業セクターの GDP 貢献率は 1990 年 22.4%、1995 年 23.8%、2000 年 23.8%（1995 年と同率）及び 2004 年 25.1%であった。ここに示されるように、トルコの国民経済のほぼ 4 分の 1 は製造業セクターによって担われている。

トルコ国民教育省は、制御技術を備えた人材育成のため、日本の支援により 2001 年から 2006 年にかけて実施された「自動制御技術教育改善計画」（技術協力プロジェクト）において、アナトリア職業高校イズミール校及びコンヤ校に自動制御学科を設立した。自動制御学科のカリキュラムは、メカトロニクスとコンピュータ・ネットワークを主要分野として、各種制御技術の体系化を図ったものである。トルコ国民教育省は、「自動制御技術教育改善計画」の成果を受けて、トルコ国内各地のアナトリア職業高校 20 校に自動制御学科を設けるとともに、イズミール校の付属施設として教員研修センター（TTC）を設立し、教員研修を実施する等、自動制御技術の職業教育訓練の普及を図っている。

イズミール校 TTC は 2006 年に教員研修を開始したが、研修用教材の未作成、研修コースの運営体制の未整備、研修コースの評価手法の未整備等の課題が挙げられている。

自動制御技術教育の普及のため、2005 年 8 月にトルコ政府は「自動制御技術教育普及計画」について、我が国に協力を要請した。2006 年 1 月から 3 月にかけて、JICA は自動制御学科が新設される 20 校のうち、4 校のある都市について（アンカラ、エスキシェヒール、ブルサ、ゲブゼ）、ローカルコンサルタント及び本邦コンサルタントにより、人材ニーズ調査を行った。2007 年 1 月には事前評価調査団を派遣し、要請の対象となった「自動制御技術教育普及計画」の事業実施に係る諸条件を調査するとともに、プロジェクト計画に関してトルコ政府と基本的な合意を形成した。

本ドキュメントは、トルコ共和国政府関係当局と JICA の合同で作成された。本ドキュメントは、プロジェクトの背景及び基本計画を示したものであり、プロジェクト活動の進捗に伴い、必要に応じて適宜見直される。

第２章　プロジェクト実施の背景

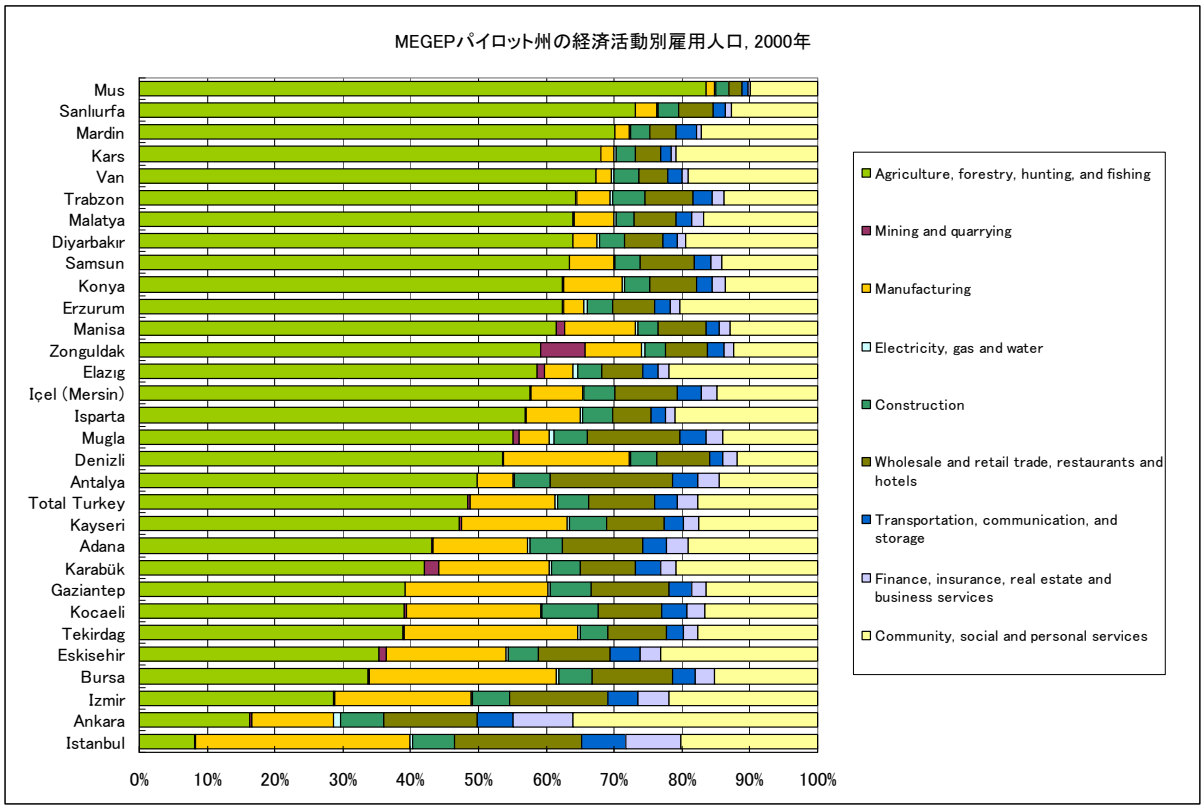
２－１社会・経済情勢

（１）　社会事情

2000 年センサスでは、トルコの総人口は 6,780 万人で、以前より人口増加率の低減が見られるものの、2000 年で増加率は 1.83%の水準にあった。経済成長に伴って、人口の都市部への流入が顕著となり、1960 年には都市部 32%、農村部 68%であった人口の割合が、2000 年には都市部 65%、農村部 35%と逆転している。この結果、都市部と地方で所得格差が生じている。

失業率は 12.4%（2004 年）と高止まりである。特に若年層の失業率が高いこともあって、深刻な社会問題となっている。2000 年センサスの結果によれば、一次産業従事者数を含めた雇用人口はトルコ全国で 25,997 万人である。経済活動別に見た雇用人口の割合は次図に示すように州によって大きく異なる。

図 1



出所：”General Censuses of Population”, 2000

製造業雇用人口の割合を見ると、イスタンブール州では 32.9%のところ、東部のワン州では 2.7%と低い。製造業雇用人口の割合の全国平均は 12.6%で、これを大きく下回る州は東部と東南部を中心に見られる。本調査の対象に含まれる 20 校のアナトリア職業高校が所在する州の間にもこのような違いが存在する。この 20 州の内、製造業雇用人口の割合が全国平均を上回る州はイスタンブール、アンカラ、ブルサ、エスキシール、テキリダッグ、コジャエリ、ガジアンテップ、アダナ及びカイセリの 9 州で、残りのアンタルヤ、デニスリ、メルシン、エルズ

ラム、コンヤ、マラトヤ、ワン及びサンリルファの 8 州は全国平均を下回る。また上図に含まれないアフィオン、カラマンマラ及びオルドウの 3 州も全国平均を下回る。以上の状況は、主要産業が西部マルマラ地域に集中し、東部及び東南部の経済発展が遅れているためである。このような東西の経済格差は国家政策上の大きな課題の一つとなっている。

（２） 経済事情

1990 年代以降、トルコの国民経済は急成長を続けている。1990 年代は、第一次湾岸戦争、高インフレ、ロシアの政治経済危機などにもかかわらず、GDP の年間成長は平均 3%を越えた。2001 年には大きな経済危機がありマイナス成長となったが、その後は 6%（2003 年）から 9%（2004 年）と GDP の成長が維持されている。製造業セクターの GDP 貢献率は 1990 年 22.4%、1995 年 23.8%、2000 年 23.8%（1995 年と同率）及び 2004 年 25.1%であった。ここに示されるように、トルコの国民経済のほぼ 4 分の 1 は製造業セクターによって担われている。

トルコの主要経済指標

- GNP：2,995 億ドル（1 人当たり：4,172 ドル）（2004 年）
- リラ相場：1 ドル＝約 1.40YTL（新トルコ・リラ、2007 年 1 月）
- 経済成長率：9.9%（2004 年）（2005 年政府見通しは 5.0%）
- インフレ率：9.2%（2004 年）（2005 年目標は 8%）
- 外貨準備高：約 536 億ドル（2004 年末）
- 債務残高：対 GNP 比 60.0%（2005 年政府見通し。2004 年末は 63.5%）
- 観光客数：1,751 万人（2004 年、前年比 25%増）

出所：外務省「トルコ概況」、2006 年 1 月、他

２－２ 教育セクター全体の状況

２－２－１ 教育制度と教育行政

初等教育から高等教育までのトルコの学制を図 2 に示す。初等教育から高等教育までの教育行政は国民教育省（MoNE）により行われている。国民教育省の組織図を図 3 に示す。中等教育は普通教育と職業教育に大別される。中等レベルの職業教育は工業分野と商業・観光業分野等の高校で構成される。2005/06 学年度（9 月開始）において、これら職業教育分野の高校はトルコ全国で 4,029 校を数える。その内、工業分野の職業教育は国民教育省の技術職業教育総局（General Directorate of Technical and Vocational Education: GDTVE）が担当している。GDTVE の組織図を図 4 に示す。GDTVE はアナトリア工業高校（Anadol Teknik Lisesi: ATL）、アナトリア職業高校（Anadolu Meslek Lisesi: AML）、工業高校（Teknik Lisesi: TL）及び職業高校（Endüstri Meslek Lisesi: EML）等を管轄している。EML は三年制で他の高校は四年制である。アナトリアの名称を冠する高校には全国共通試験を介さないと入学できず、また外国語の履修単位数が大きい。2005/06 学年度における GDTVE 管轄の学校は 1,580 校[1]で、学生数は 474,715 人である。

[1] アナトリア工業高校は 157 校、アナトリア職業高校は 134 校（1998/99 学年度）

図２　トルコの学制と技術職業教育総局（GDTVE）が所掌する高校

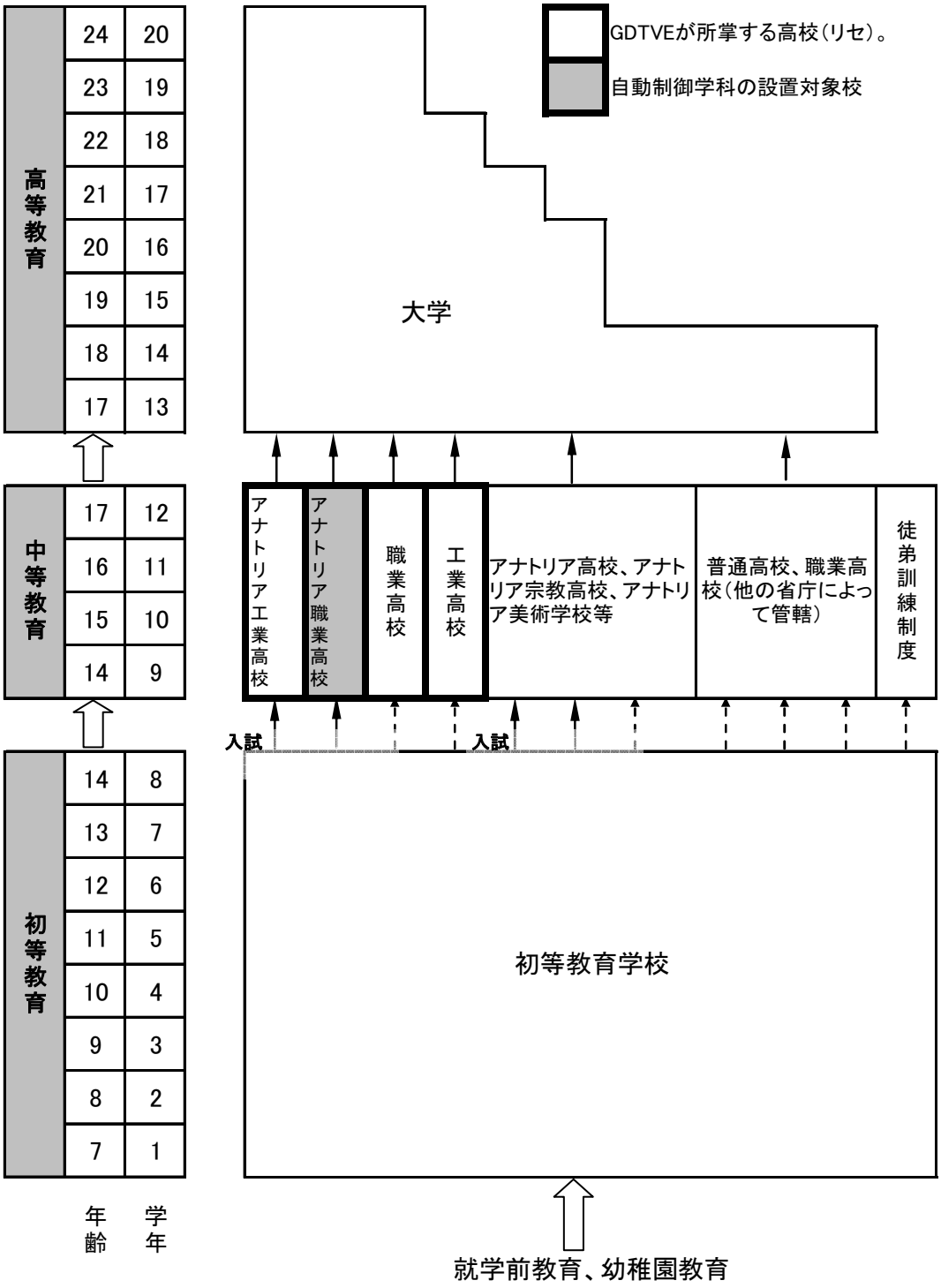
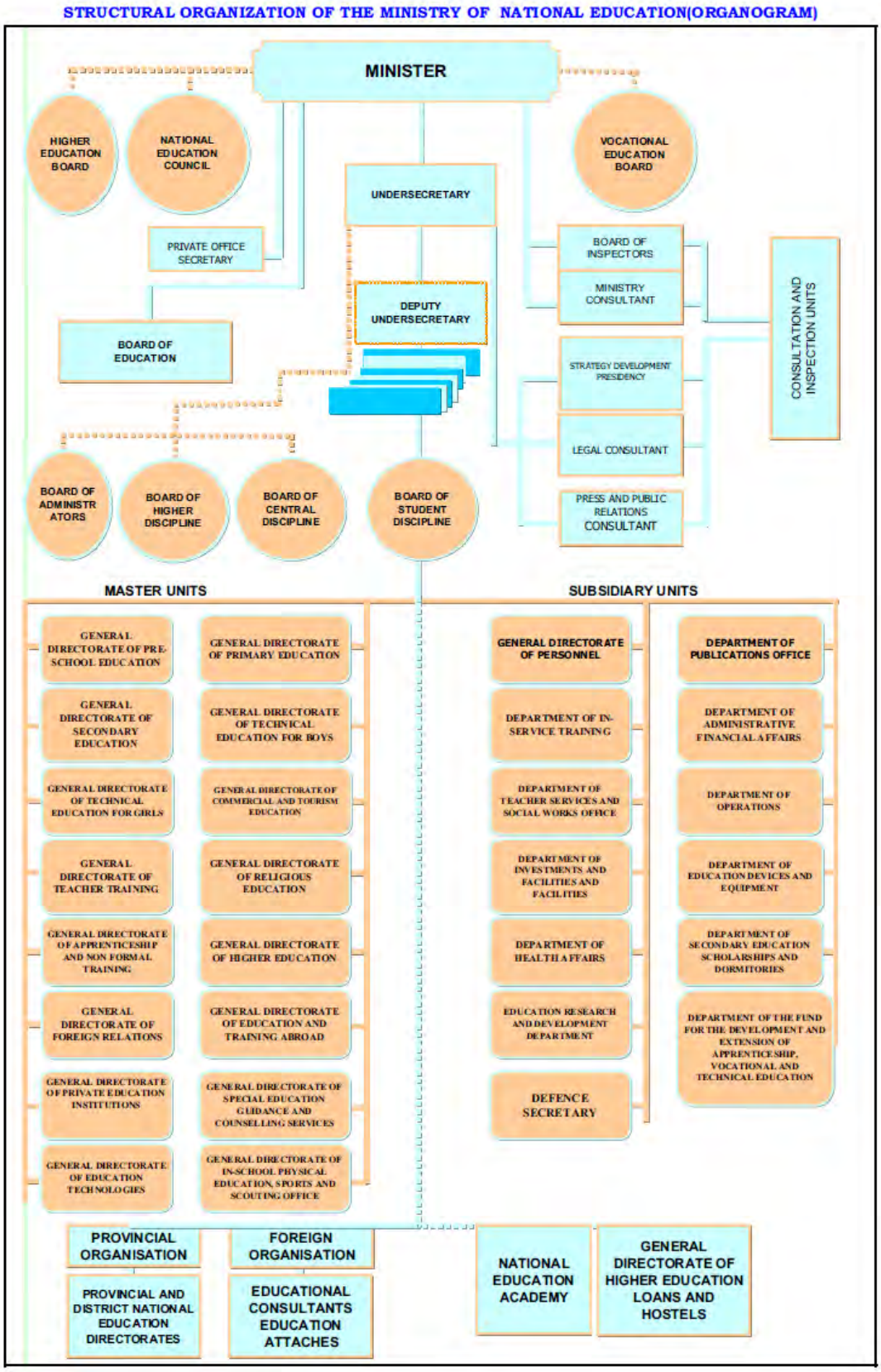
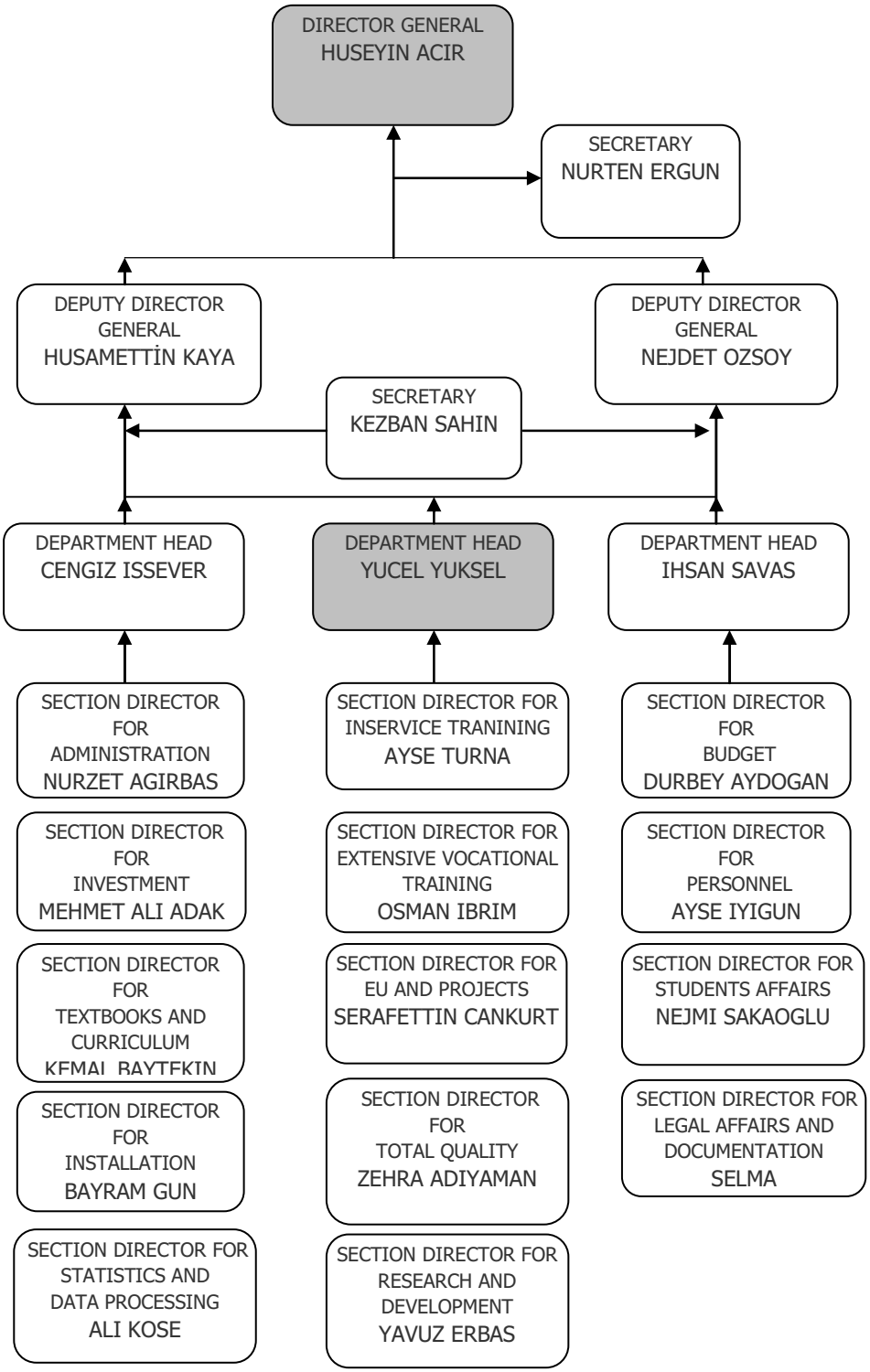


図 3　国民教育省組織図



出所：国民教育省、2006 年

図 4　技術職業教育総局組織図



２－２－２　一般教員研修

（１）教員人事

男性教員の在職期限は 25 年、女性教員は 20 年である。採用から 5 年間は ordinary teacher、その後 14 年間は expert teacher、その後 6 年間は major teacher と、三段階の格付けを経る。各段階への昇格には試験を伴い、校長職には別に試験がある。このような昇格に対応する研修体制は特に存在しないが、校長と副校長を対象とする管理者研修はある。関連法規や制度の改正事項が主な研修事項である。初めて校長になった人には管理者研修に優先が与えられる。

（２） 教員研修

現職教員に対して、主に毎年の夏休み等休暇期間中に研修が実施されている。国民教育省教員研修部（Department of In-service Training）が教員の一般研修事業の調整を担当している。研修の企画（分野、期間、研修課題）は各総局が決める。研修課題の計画に際し、教員からの要請を受けて課題を決めることや、産業界に打診し工場視察を課題とすることもある。各総局のウエブサイトで研修計画が発表され、これを見て応募する。人気のある課題では 40 人定員に対して約千人の応募があったこともある。このような時は同じ課題の研修を再度開催し対応する。受講者には教員研修部から修了証が発行される。自動制御学科の場合は、学科普及の対象 20 校だけが応募可能である。

全国 8 箇所の高校を研修施設として利用している。演習室があること及び寮施設があることが使用する理由である。一般的な研修施設があり、制度上は使用可能ではあるが、演習室がないので使えない。GDTVE では 2006 年に教員研修を 40 コース開催し、延べ 781 人の関係教員が受講した。研修課題とコースの日数を付属資料 3 に示す。一回 5 日間、15 人から 20 人参加の研修コースが多い。PLC、 CNC、 CAD、 Basic 言語、 3D Modeler などの研修課題が目立つ。管理者コースは 6 回開催され、275 人が参加した。2007 年は 89 件の研修コース（VET 教員 82 件、管理者 7 件）により 1,831 人の研修を計画している。

２－３　教育分野の政府開発方針

中期開発計画（2007 年～2009 年）では、人的資源の開発が主要目標の一つとなっている。中期開発計画では、雇用機会の増大、経済の地域間格差の緩和、教育セクターの開発と言った様々な見地から人的資源の開発が目指されている。

雇用機会増大の見地から見た人的資源開発のための基本政策では、職業教育訓練の分野においては、①人材需要を満たすためにモジュール教育への転換を加速すること、②教育制度と労働市場の協力関係を強化すること、③若年層の雇用を高めるため遠隔教育及び非公式教育を活用して情報技術分野での人材開発を支援すること等が挙げられている。

経済の地域間格差を緩和する見地からは、地域の潜在的可能性及び労働力需要に合わせて、起業促進と労働力の品質向上を行い、特に経済発展の遅れた地域において、地域特性を引き出すための支援を行うことが政策目標となっている。

教育セクター開発の見地からは、①初等中等教育の質的向上を図るためにカリキュラムを改善すること、②そのため教員及び管理職の研修を行うこと、③中等教育の構造改善は学校の多様化ではなく教育プログラムの多様化に基づいて行うこと、また④教育面で情報技術の集約的かつ有効な適用を図ること、が政策方針として定められている。

２－４　関連プロジェクト

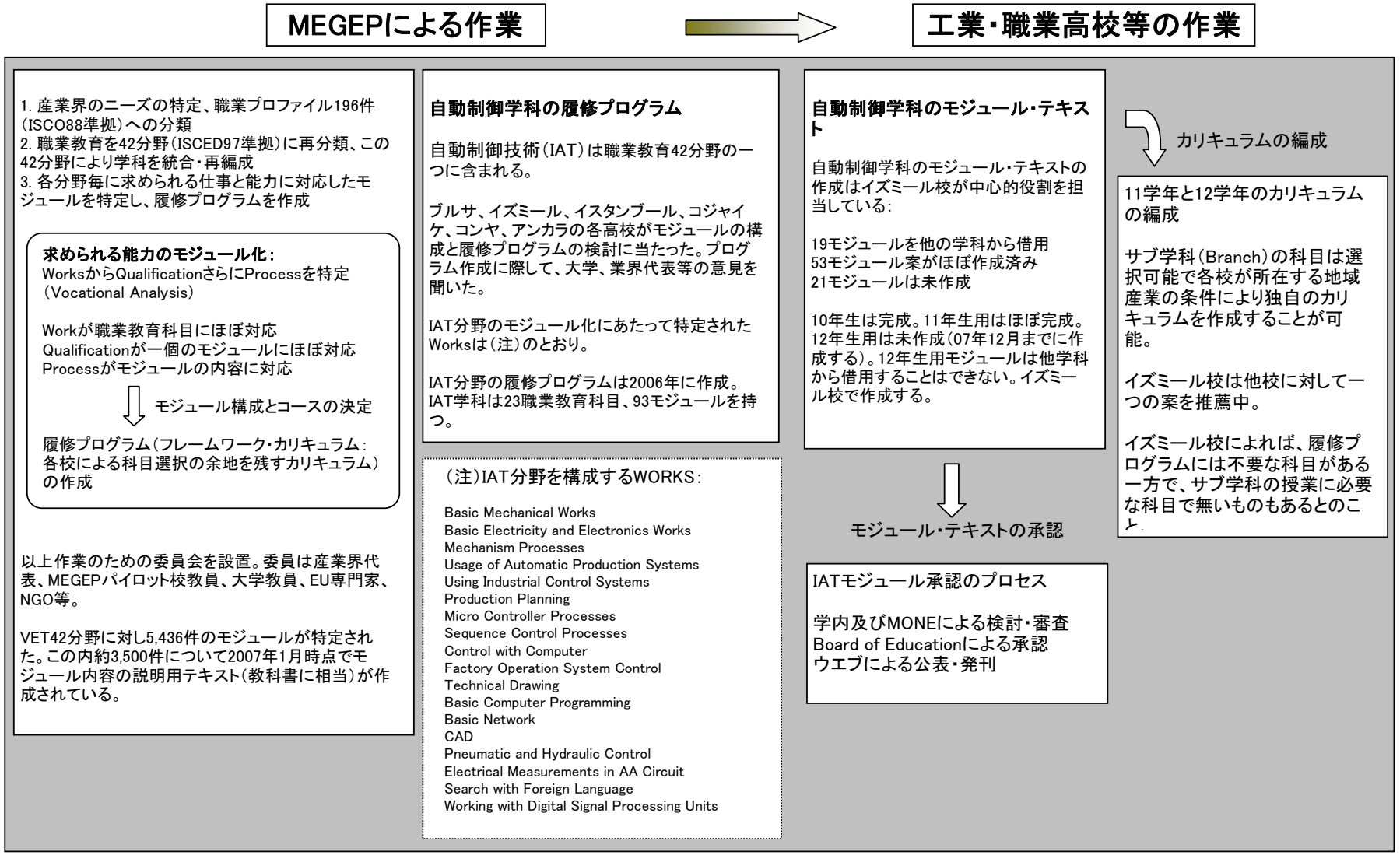
２－４－１　職業教育訓練制度強化計画

（１）学科の再編成と教育のモジュール化

2002 年 9 月から 2007 年 9 月までの 5 年間を実施期間として、国民教育省は EU の支援を受け、職業教育訓練制度強化計画（MEGEP）を実施中である。この計画により促進された職業教育訓練改革の一つの分野として、学科の再編統合、教育内容のモジュール化及び履修プログラムの開発がある。このプロセスを図示すると図 5 のようになる。モジュールの枠組みと履修プログラムの開発に際しては、産業界に対する能力ニーズの調査結果をもとに、分野ごとに、MEGEP のパイロット校教員、EU 専門家、大学教員等によるグループ作業を経るプロセスが取られている。この作業には国民教育省も参画している。

製造業、サービス業、運輸業の職業が ISCO88（ILO が提唱する職業分類の国際基準）の分類方法により 196 件の職業に分類され、この職業分類に基づいて、中等教育職業教育訓練の教育分野が従来の約 98 学科から 42 分野に整理統合された。42 分野の分類方法は ISCED97（UNESCO が提案する教育分類の国際基準）に基づく。

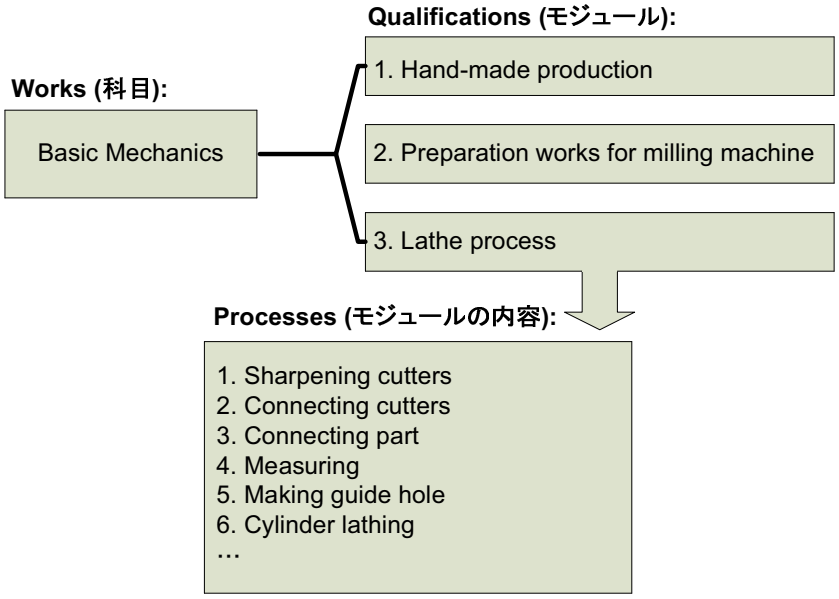
図5　新課程のカリキュラム編成作業の流れ



モジュールの枠組みの開発に際しては、職業教育分析（Vocational Analysis）と称する検討を経て、職種と能力に対応した技術内容の分析が行われた。この検討は Work-Qualification-Process の過程を経ている。Work は職業教育科目、Qualification は科目を構成するモジュール、Process はモジュールを構成する細分化された技術・技能に相当する。

職業教育科目の一つ「機械技術基礎」を例に取ると、この科目は手工作、フライス盤の準備、旋盤工作の三つのモジュールに分けられ、またモジュールの一つ「旋盤工作」はバイトの準備や部材の測定など複数の技能に分けられた。図 6 は「機械技術基礎」の職業教育分析が検討された際に取られたプロセスを示す。このように、モジュールは一種の技術単位から構成されるもので、実習を設定できない授業科目はモジュール化できないと言われる。

図 6　Vocational Analysis の事例



引続き行われた作業として、公募等[2]により職業教育訓練校等から選定された教員により、モジュール・テキストの作成が行われている。内容は従来の教科書に相当する。42 分野合計で、5,436 件のモジュール・テキストを作成する計画である。2007 年 1 月現在、約 3,500 件が作成済みと言われる。作成されたモジュール・テキストの内いくつかは、MEGEP のウエブサイトで公開されている。印刷物として発刊されたものもある。

職業教育 42 分野の一つ（コード No.523）に自動制御技術（産業オートメーション技術）分野が含まれている。イズミール校とコンヤ校に設置されていた自動制御学科（産業オートメーション技術学科）は情報機械科と情報電子科のサブ学科（ブランチ）から構成されていたが、学科の整理統合と履修プログラムの新設に伴い、メカトロニクスとインダストリアル・コントロールの二

[2] 多数の教師から応募があったと言われる。公募した事情の背景には、国民教育省は 42 学科全てについてモジュール作成に責任を持たなければならない状況があった。その中で自動制御学科のモジュール・テキストの作成は主にイズミール校やコンヤ校の教員に委託された。これは、先行プロジェクト（JICA、2006 年終了）の経験を生かすためであったとのこと。

つのサブ学科から構成されることとなった。新学科の定員数は各サブ学科 30 人で合計 60 人である。自動制御学科の履修プログラムは、アナトリア職業高校とアナトリア工業高校用の二種類が用意されている。現在 26 校において自動制御学科が設置されており、これらのほとんどはアナトリア職業高校である。

（２） 修学年数の短縮

MEGEP による学制改革は 2005/06 学年度から実施された。その結果、従来 5 年制であったアナトリア工業高校では、準備課程として外国語学習に充てられていた最初の 1 学年が廃止され、4 年制に短縮された。アナトリア職業高校では、従来の 4 年制が維持されると共に、最初の 1 学年の外国語学習は廃止され、4 年間が外国語学習を含む一般科目と職業教育科目の学習に充てられることとなった。また、一般科目と職業教育科目の単位数が変更されたこともあって、学科名が同じでも、学校（リセ）により職業教育科目に割り当てられる週当たりの授業時間数に差が開く結果ともなった。例えば、自動制御学科、機械技術学科、情報技術学科については、アナトリア工業高校が 11 学年 14 時間、12 学年 17 時間を職業教育科目に充てているのに対して、アナトリア職業高校では 11 学年 27 時間、12 学年 30 時間を割いている。その結果、これらの学科では両学年とも週当たり 13 時間と、アナトリア職業高校の職業教育科目の授業時間数が格段に多い状況となった。

２－４－２ 他のドナーによる関連プロジェクト

MEGEP とほぼ同じ実施期間で、EU 支援により、教員研修を主な計画内容とする職業教育訓練近代化計画（MVET）が実施されている。MGEP と同様にこれも 2007 年 9 月に終了する。他に EU 支援による教育分野の計画として、具体的内容は不明であるが、社会人教育を内容とするプロジェクトが北東部及び南東部で実施予定である。

世界銀行は 2005 年から 2010 年にかけて、中等教育プロジェクト（Secondary Education Project、借款額 1 億 4 百万 US$）を実施中である。生涯学習を支援することが主たる目的で、そのために中等レベルの普通教育と職業教育の質と公平性の向上を図る。計画は複数のコンポーネントから構成され、知識経済（knowledge economy）と生涯学習に必要な基礎能力を学生が備えるためのカリキュラムの改正と実施、情報通信技術面の訓練、キャリア・ガイダンスの実施、中等教育評価システムの開発等の内容から構成されている。

第３章　開発課題「産業人材育成」の現状と課題

３－１　開発課題「産業人材育成」の現状

３－１－１　自動制御技術に関する人材需要

製造業セクターを対象に行われた人材需要調査の一つに、トルコ金属製品製造業者組合[3]（Turkish Metal Goods Manufacturers Syndicate: MESS）の実施した MESS 加盟会社人材需要調査（2004 年）がある。中部西部の 4 州 119 社の技能職（technician）の教育レベル等を対象としている。調査結果によれば、77%余の会社が NC/CNC 工作、CAD/CAM、電気電子、電子部材、機械操作の基本原則、数学、計測機器の使用、油圧空圧、製図と図面理解、先進技術情報の面で、その技能者に能力または知識に不足があると回答している。また、能力不足が認められる職種・技術分野として、計装（配電盤組立）、電気工事、電子学、製図、メカトロニクス、NC/CNC 加工、自動制御、製造ライン運用、自動車保守修理、プラスチック金型、プレス加工等があるとの結果が得られた。

MEGEP の労働市場及び能力需要調査（2005 年）は全セクターにまたがり、31 州の約 5 千社を対象に実施された。過去 12 ヶ月の間に工業高校及び職業高校卒業生を採用した企業の回答数のうち、製図能力について 43%、職業能力について 31%、コンピュータ使用能力について 30%が、卒業生の能力が低いと回答している。

中小企業開発機構（KOSGEB）の調査（2005 年 10 月）結果では、今後数年の間に 17 州において制御技術者・技能者の新規需要が約 3 万人見込まれるとの推定がなされている。現在国民教育省が産業オートメーション技術教育普及の対象としているアナトリア職業高校 20 校の自動制御学科からは、最大で毎年 1,200 人が卒業することになる。国民教育省では、このような需給状況について、少なくとも供給過多にはならないと考えている。

近年の産業セクターの成長には顕著なものがあり、トルコの国民経済に対する産業セクターの貢献は今後さらに高まるものと考えられる。以上の調査や分析の結果を踏まえると、製造業界等の企業では採用社員の技能水準に必ずしも満足していないことなどが判明しており、特に、オートメーション技術等の先進技術の導入が今後促進されると考えられる製造業界では、一定の技能水準を備えた人材に対する需要は高い。

３－１－２　トルコにおける日系企業の活動

日本貿易振興機構の 2005 年末時点の調査[4]によれば、在トルコ日系企業は約 50 社あり、その内製造業は 16 社存在する。日系製造業を業種別で見ると「輸送用機械」が 3 社、「輸送用機械部品」が 10 社を占めており、日系製造業は自動車産業が中心となっている。残る 3 社は「食品・農水産加工」等である。欧州市場への地理的アクセスなどの好条件から、トルコには欧米や日本の自動車産業が多く進出しているが、2004 年には日本の大手自動車製造業が工業部門輸出額の首位となった。日本貿易振興機構の調査結果によれば、経営上問題となる項目として、5 社以上の企業が貿易制度、投資制度、インフラ整備に係る事項を挙げている。次いで 4 社が人材確保の難しさを問題点として挙げている。

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[3] MESS：トルコの主要企業団体の一つで、自動車、金属、機械、情報機器、電気機器、無線通信、医薬精密光学及び家具の分野の約 300 社（従業員総数約 12 万人）で構成される。

[4] 在欧州・トルコ日系製造業の経営実態調査（日本貿易振興機構、2006 年 9 月）

３－２　産業技術教育の制度的枠組み

３－２－１　トルコの自動制御学科普及計画

（１）普及対象校の選定

我が国の技術協力（2001 年～2006 年）によりイズミール及びコンヤ校に設立された自動制御学科を他の学校に普及する計画が国民教育省により立案され、既に実施に移されている。国民教育省が自動制御技術教育の普及の対象としている学校はアナトリア職業高校で、全国から 20 校が選定された。これらの選定に際し適用された条件は、学校所在地域の産業セクター、人口移動、失業率等であった。また対象校に電気・電子学科、機械学科があることも条件とされた。これら普及校の所在州、名称及び自動制御学科の認可月日等を表 1 に示す。認可が 2004 年に行われた学校は 11 校でこれを第一グループ、2006 年に認可された残りの 9 校を第二グループと称している。学制改革後の新設自動制御学科への最初のクラスは、先発の第一グループでは 2005/06 学年度に入学し、後発の第二グループでは 2006/07 学年度に入学した。本プロジェクトは、以上の自動制御学科普及計画を直接の支援対象として要請されている。

（２）普及校に対する機材配備

国民教育省は、先発 11 校に対して自動制御演習室に配備する機材供給を進めている。配備済みの主要機材として、ドイツ製ファクトリー・オートメーション（FA）演習装置、PC、PLC 実習装置等が含まれている。このうち、大型機材は国民教育省が一括調達し各校に配備し、小型機材は各校が予算配分を受けて調達した。小型機材用の一校当たりの配布予算は 127,500YTL（約 1,000 万円）から 150,000YTL（約 1,200 万円）である。後発 9 校に対する機材は 2007 年 1 月現在配備されていない。後発校の最初のクラスは 2006/07 学年度に入学し、機材演習が必要な 11 年生に進級するのは 2008/09 学年度となるので、それまでは機材配備の必要がないためである。

表 1　普及校 20 校及び自動制御学科の認可時期

NO	Province	Name of School	Principal	Remark	Budget Allocation for Equip. (YTL)	Establishment approval date
1	ADANA	Merkez ATL-AML	Ramazan TEKE	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004
2	AFYON	Gazi ATL-AML	Erol AVCIOGLU	2006-2007 Went to Japan in 2nd group	150.000 2006	24.01.2006
3	ANKARA	İskitler ATL-AML	Ahmet OZDEMIR	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004
4	ANTALYA	Merkez ATL-AML	Hasan OZEN	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004
5	BURSA	Ali Osman Sönmez ATL-AML	Gurol ERISMIS	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
6	DENIZLI	Merkez Şehit Öğretmen Yusuf Batur ATL-AML	Kudret YEMISCIOGLU	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
7	ERZURUM	Atatürk ATL-AML	Fikret UMUDUM	2006-2007 Went to Japan in 2nd group	150.000 2006	24.01.2006
8	ESKISEHIR	Ataturk ATL-AML	S.Sirri KABADAYI	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	140.000 2005	14.07.2004
9	GAZİ ANTEP	M.Rustu Uzel ATL-AML	Abdulkadir KALYENCI	Started 2005-2006 Went to Japan in 2nd group Automation Lab. 2006	127.500 2004	14.07.2004
10	MERSIN	Tarsus-Merkez ATL-AML	Hasan GURBUZ	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	140.000 2005	14.07.2004
11	İSTANBUL	Pendik ATL-AML		Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004
12	KAHRAMAN MARAS	Merkez ATL-AML	Mustafa DAŞCI	2006-2007 Went to Japan in 2nd group	150.000 2006	24.01.2006
13	KAYSERI	Hurriyet ATL-AML	Durmuş PAYAS	2005-2006 başladı Went to Japan in 2nd group	127.500 2004	05.10.2004
14	KOCAELI	Gebze ATL-AML	Mehmet Ali TOKLUOĞLU	Started 2005-2006 Went to Japan in 2nd group Automation Lab. 2006	140.000 2005	14.07.2004
15	KONYA	Adil Karaagac Anadolu Teknik Lisesi	Muzaffer APAN	Started 2005-2006 Went to Japan in 3rd group Automation Lab. 2006	140.000 2005	14.07.2004
16	MALATYA	Yunus Emre ATL-AML	Huseyin KAYA	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
17	ORDU	Merkez ATL-AML	Omer BAŞ	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
18	SANLI URFA	Merkez ATL-AML	Abdulkadir ACAR	2006-2007 Went to Japan in 2nd group	150.000 2006	10.03.2006
19	TEKIRDAG	Çorlu-M.Rustu Uzel ATL-AML	Caner BAYSAL	2006-2007 Went to Japan in 3rd group	150.000 2006	24.01.2006
20	VAN	Merkez ATL-AML	Veysel AKDAS	Started 2005-2006 Went to Japan in 1st group Automation Lab. 2006	127.500 2004	14.07.2004

出典：MoNE,　2007 年 2 月

（３）普及校自動制御学科教員に対する研修事業

自動制御学科の新設に伴い、普及校では採用または異動により必要な教員の補充を行っている。学科の定員は 15 名と計画され、20 校で合計 300 人の教員が補充される予定である。次表に示すように、2007 年 1 月までに、そのような先発 11 校の教員候補に対して自動制御技術教育の研修が TTC 等において 3 回実施されている。後発校に対しては、2007 年 2 月 19 日から 6 月 1 日（103 日間）に TTC で初回の研修を行うことが予定されている。

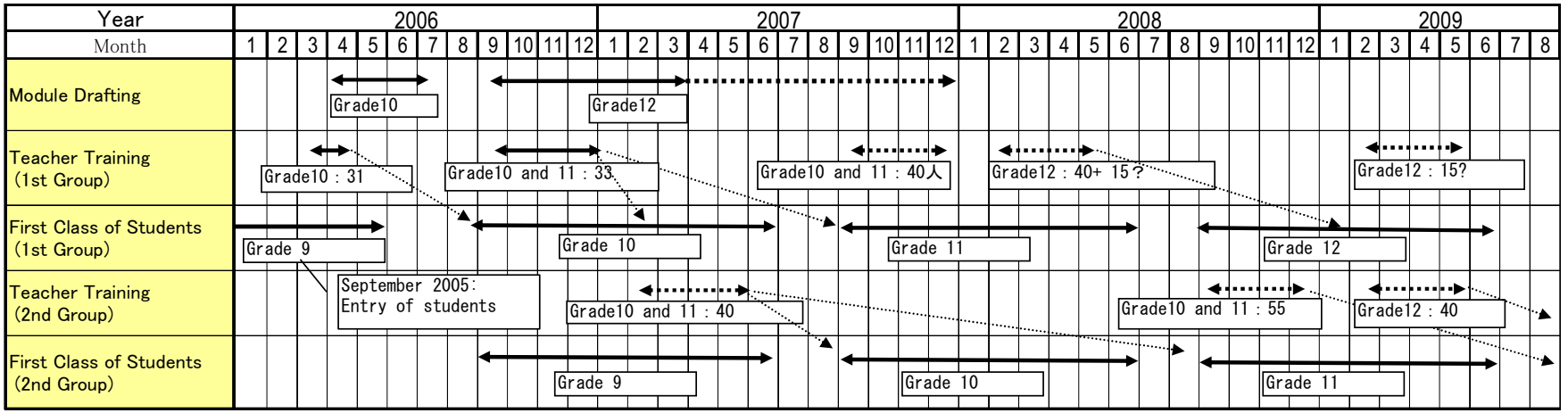
表 2　自動制御学科教師候補の研修（2007 年 1 月）

実施時期	06 年 3 月～4 月	06 年 9 月～12 月	06 年 7 月から 12 月
研修内容	10 年生用科目	10 年・11 年生用科目	FA 演習装置（臨時）
先発 11 校	31 人	33 人	20 人
後発 9 校	未実施	未実施	未実施

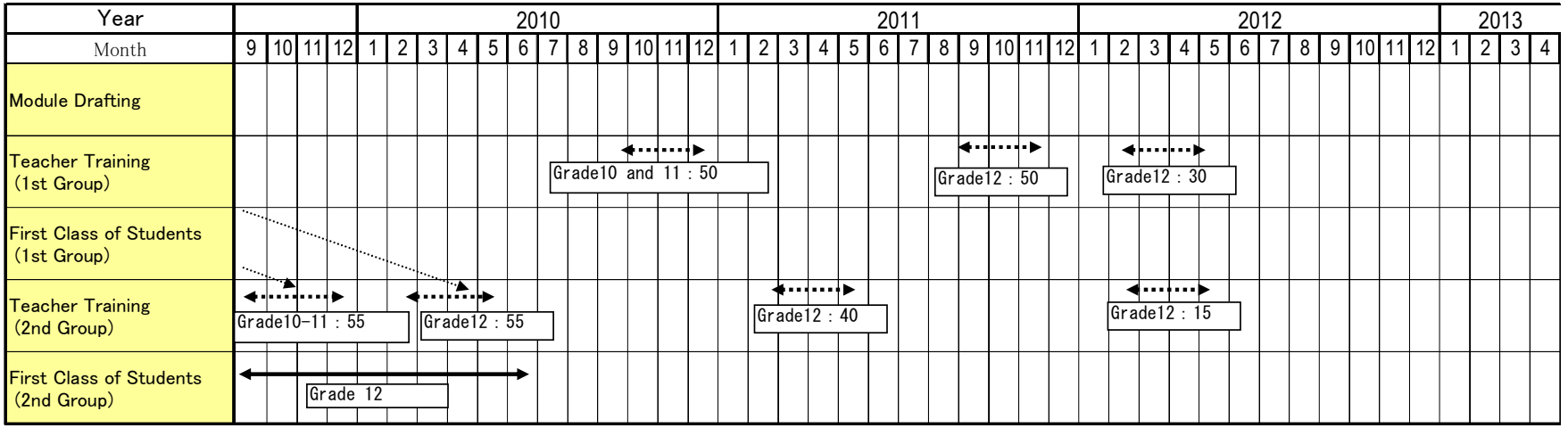
これまでのところ、電気・電子、機械、コンピュータの三分野から一人ずつ研修を受ける計画となっている。研修コースを計画する際には、研修科目の決定→受講教員数の決定→国民教育省からの通知を受け各校において教員の推薦決定と、段階を経て決められてきた。研修終了時に試験が行われ、合格者が正式に自動制御学科教員として配置される。

2006 年 3 月の 10 年生用科目の研修では、5 科目の研修を行った。これには 10 年生用科目だけではなく、Micro Controller の基礎も含められた。2006 年 9 月の研修は 3 ヶ月と長期の研修期間が得られたので、10 年生及び 11 年生用科目の研修を行った。専門分野別に分けることなく、全受講生を一括してブランチ（サブ学科）の職業教育科目の研修を行った。専門分野の研修を受けても無駄との声が強く、2007 年 2 月の後発校対象の研修ではこれを改める予定である。電気・電子分野 20 人及び機械・PC 分野 20 人の参加を得て、10 年生及び 11 年生用科目の研修が行われる。電気・電子分野の受講生にはインダストリアル・コントロール・サブ学科の職業教育科目を、コンピュータ及び機械分野の受講生にはメカトロニクス・サブ学科の職業教育科目を研修の中心にする予定である。

12 年生用科目の研修は 2007 年秋期から実施される。教員研修が所定の定員枠に対して全て終了するのは 2012 年と見込まれている。遅くとも最初のクラスの進級までに、各学年の科目の教員研修を終わらせることが条件となることから、研修の実施時期は慎重に検討されている。全期間の教員研修計画を図 7 に示す。他に 2007 年 4 月には FA 演習装置の二回目の研修を行う計画がある。



Accumulated number of participants from 1st Group: 174
Accumulated number of participants from 2nd Group: 135



Accumulated number of participants from 1st Group: 130
Accumulated number of participants from 2nd Group: 165

図7　普及校教員研修計画（2006年～2012年）

３－２－２　自動制御学科の普及校

（１）普及校の概要

普及対象の 20 校は、最東端の Van 校から最西端の Tekirdağ 校までトルコ全国 20 州にわたっている。学校所在地域の産業セクターの規模と構成は多様である。先発 11 校に対するアンケート結果（付属資料 5）によれば、そのような条件の違いによるものか、各校が持つ地域産業セクターに対する考えには、学生の実習の場として見るか就職先として見るかで幾分か差異が見られる。

付属資料 4 に各校の学科別学生数と専門分野別教員数を示す。全校学生数は大きいところで 3 千名を超え、小さいところで 500 名程度と、普及校の規模は多様である。自動制御学科の教員定員は 15 名が計画されているが､23 名で計画されている学校もある｡先発 11 校にあっても、2007 年 1 月現在で採用教員はなお 6 名～8 名程度と、半数程度が未採用である。そのため未だ担当科目の振り分けなどを決める段階にはない。

上記のアンケートは、TTC の研修を既に受講した先発校を対象としている。研修内容に関する質問の回答によれば、10 年生や 11 年生用科目の研修に十分満足していない学校が多い。不満足の理由は、教材、講義内容、研修期間等いくつかの要因がある。専門分野に対する研修は不要との声も強いが、2007 年 2 月の研修からこれに対する措置は取られている。

自動制御学科の 11 年生と 12 年生に対する職業教育 20 科目について､十分な技術知識を持つか､教材を制作できるか等を問う自己評価調査を、普及校同学科の教員で TTC の研修受講者に対して行った。最高点は 3 点、最低点は 0 点とした。56 名から得た回答結果を取りまとめて付属資料 6 に示す。56 名全員の集計結果に示されるように、平均点が 1.5 点以下の科目が半数を超えた。これは 12 年生用科目の研修がまだ実施されていないこと、また教員の専門分野によらず平均点を算出していること等が理由と考えられる｡GDTVE が行う受講生の管理によれば、教員の専門三分野のうち､「電気・電子」はさらに「電子・遠隔通信」と「電気」に分類されている。これに機械とコンピュータを加え、専門分野を 4 分野に分けて自己評価を集計した結果では、分野による違いがある程度明らかとなる（付属資料 6 のレーダーチャート参照)。機械分野の教員が苦手とする電子・電気、コンピュータ関連の科目は多い。電子・遠隔通信と電気分野の教員の自己評価は同じような傾向を示す。コンピュータ分野の教員は機械、電気・電子関連の科目を苦手としている。

（２）学校の運営体制

国民教育省技術職業教育総局が所掌する工業高校及び職業高校は 1,580 校あり、その一部に自動制御学科を置く普及校 20 校が含まれている。普及校の管理職員や教員の任免には他校と比べて異なる点はなく、またその運営予算も全高校の予算枠に含まれる。そのような背景を考えると、普及校教員に対する TTC の集中研修は特段の措置が講じられたものと言って良い。また、自動制御学科の機材配備や教員採用を促進する上で、予算措置が障害になるような状況は生じていない。技術職業教育総局では、自動制御技術教育の普及に当たって、機材配備など対象 20 校への予算配布が優先されていることを強調しているが、これは事実と考えられる。

視察した限りでは、トルコの工業・職業高校の設備はかなり古く、今回のように新設学科のために新規の大型実習機器を導入することはなかったようである。したがって、普及校においては、教員はむろんのこと、地元産業界からも新設の自動制御技術学科に対する期待は高いと

感じられた。

３－２－３　自動制御学科の履修システム

（１）　履修プログラム

新学制の自動制御学科履修プログラムの作成に際しては、MEGEP パイロット校となったブルサ、イズミール、イスタンブール（ツヅラ校)、コジャエリ、コンヤ、アンカラ（イスキティール校）の各高校の教員が、モジュールの構成と履修プログラムの内容検討に当たった。検討作業の一環として、大学、業界代表等の意見が聞かれている。またその後は、前プロジェクトの成果である科目構成（カリキュラム）をベースに、前プロジェクトのカウンターパートが中心となってモジュール及びカリキュラムが考案された。このことは IAT 学科の運営に必要な組織能力が存在することを示唆する。

履修プログラムは、授業科目の学年別構成と必要な履修時間数を定める。アナトリア職業高校用の自動制御学科履修プログラムは､一般科目 22 科目､職業教育科目 23 科目から構成され、週 40 時間の授業が割り当てられる（表 3 参照)。一般科目の構成と履修時間数は定められているが、職業教育科目については、履修科目の枠組みと合計時間数を定めるだけで、地域の産業ニーズに合わせるため、科目の選択は学校に任されている。

イズミール校では、11 年生と 12 年生別及びサブ学科別の科目の振り分けは既に完了している（付属資料 9)。11 年生から分かれるメカトロニクス・サブ学科では、PLC の使い方と各種装置の制御方法（FA 装置が中心)、マイクロコンピュータによる制御、CAM による加工が主な学習内容である。インダストリアル・コントロール・サブ学科では、PLC の使い方と各種装置の制御方法、マイクロコンピュータによる制御及びアプリケーション開発、コンピュータ・ネットワークの設置方法が主な学習内容となっている。イズミール校のカリキュラムとして作成されているが、普及校に対してもカリキュラム作成の上で同校のものを勧めている。アンカラのイスキティール校では、アンカラ産業界の意見を反映するため、どの科目やモジュールに注目すべきか同校の先生が検討中とのことであるが、当面はイズミール校が準備したカリキュラムをそのまま使うとのことである。

表 3　自動制御学科履修プログラム

ANATOLIAN VOCATIONAL HIGH SCHOOLS
INDUSTRIAL AUTOMATION TECHNOLOGIES
(MECHATRONICS AND INDUSTRIAL CONTROL)
WEEKLY COURSE CHART OF FRAME TRAINING PROGRAMME

COURSE CATEGORIES		COURSES	IX. GRADE	X. GRADE	XI. GRADE	XII. GRADE
COMMON COURSES		*LANGUAGE AND NARRATION	2	2	2	2
		TURKISH LITERATURE	3	3	-	-
		RELIGIOUS CULTURE AND ETHICS	1	1	1	1
		HISTORY	2	2	-	-
		TURKISH REPUBLIC HISTORY & KEMALISM	-	-	2	-
		GEOGRAPHY	2	2	-	-
		MATHEMATICS	4	-		
		PHYSICS	2	-		
		CHEMISTRY	2	-		
		BIOLOGY	2	-		
		HEALTH	2	-	-	-
		PHILOSOPHY	-	-	2	-
		FOREIGN LANGUAGE	10	4	4	4
		PHYSICAL TRAINING	2	-	-	-
		NATIONAL SECURITY	-	1	-	-
		TRAFFIC & FIRST AID	-	-	1	-
		TOTAL	**34**	**15**	**12**	**7**
FIELD/BRANCH COURSES	COMMON COURSES OF THE FIELD	INFORMATION AND COMMUNICATION TECH.	2			
		MATHEMATICS		3		
		VOCATIONAL DEVELOPMENT		2		
		BASIC MECHANICS		5		
		*BASIC INDUSTRIAL APPLICATIONS		9		
		TECHNICAL AND VOCATIONAL DRAFT		2		
	BRANCH COURSES	*SKILL TRAINING AT FIRMS	-	-	27	30
		MECHANISMS				
		BASIC COMPUTER NETWORKS				
		MODELLING ON COMPUTERS				
		PNEUMATIC AND HYDRAULICSYSTEMS				
		*COMPUTERIZED CONTROL				
		*SUCCESSIVE CONTROL				
		*PLANT AUTOMATION				
		AUTOMATIC PRODUCTION				
		SCADA SYSTEMS				
		TECHNICAL FOREIGN LANGUAGE				
		CIRCUIT ANALYSIS				
		INDUSTRIAL MANAGEMENT				
		BASIC PROGRAMMING				
		BASIC COMPUTER NETWORKS & SERVER SERVICES				
		COMPUTERIZED CIRCUIT DESIGNS				
		SENSORS & SIGNAL RECORDING				
		*MICRODETECTOR APPLICATIONS				
		INTERNET PROGRAMMING AND SECURITY				
		INDUSTRIAL SYSTEMS				
		INSPECTION SYSTEMS				
		NUMERICAL SIGNALLING SYSTEM				
TOTAL FIELD/ BRANCH COURSES			**2**	**21**	**27**	**30**
OPTIONAL COURSES			**3**	**3**	**-**	**2**
GUIDANCE			**1**	**1**	**1**	**1**
TOTAL			**40**	**40**	**40**	**40**

(*) refers to the courses which are not applicable to the annual average success grade in accordance with the Article 33. of the Class Achievement Regulation for Secondary Schools, Ministry of National Education.

（２）モジュールの構成

自動制御学科の履修プログラムでは、10 年生以降が学習する 28 科目を合計 93 モジュールで構成するよう定めている。一科目当たり平均 3 モジュールで構成されることになるが、科目によっては多いもので 14 モジュールから成るものもある。

トルコの工業・職業高校では、主に職業訓練的な内容が教えられている。今回作成されたモジュールにおいても、要約から判断する限りでは、11 年生と 12 年生になるほど「使い方」や「操作」という事項が多くなる。具体的な実習機器による操作法が、授業内容であると思われる。

（３）モジュール・テキストの開発・作成

学制改革の結果履修プログラムが変わり、またモジュール・システムが導入されたので、新課程では前プロジェクト（2006 年終了）で作成された教科書は使用されていない。自動制御学科の場合は、モジュール作成に際して、前の教科書が参考にされたケースと参考にされなかったケースの両方がある。10 年生以降で使用される 93 モジュールのうち 53 モジュールが完成していると言われるが、まだドラフト段階のもの、学内審査を終え国民教育省で審査中のもの、国民教育省の審査を経て Board of Education の承認を得たもの、と種々の段階に分散している。12 年生用モジュールは全てドラフト作成の段階にあり、2007 年 12 月までに国民教育省に提出される予定である。

なお、イズミールと普及校では実習機器が異なるので、2 種類のテキストを作成するということでもある。12 年生のモジュール・テキスト作成のため、技術的な学習内容や実習内容などの検討に必要な教材及び新技術の知識など、日本側の助言が必要とのことである。先発校に対する 12 年生用の教員研修は 2008 年春季に計画されており、また 12 年生の授業は 2008 年 9 月から開始される。このような状況の中で、テキストを 2007 年 12 月までに作成することが求められている。

自動制御学科のモジュール作成はイズミール校の教員 15 人が中心となって進められている。次表に示すように、約 30%が他校の協力を得て準備された。コンヤ校等の支援を得て作成されたものと隣接学科で作成されたものの導入である。

表 4　2007 年 1 月末現在のモジュール・テキスト作成状況

学年	イズミール校	コンヤ校	イスキティール校	隣接学科のものを導入	合計
10 年生、11 年生用	45	7	1	19	72
12 年生用	15	6			21
合計	60	13	1	19	93

自動制御学科では教員用のモジュール・ガイドを作成していない。TTC 研修用の教材も今のところ用意しておらず、学生用モジュール・テキストを援用している。研修用テキストは作成する必要があるが、現在はモジュール・テキスト作成に専念しており、将来時間が取れれば研修用テキスト作成に着手したいとのことである。

３－３　教員研修センターの現状と課題

３－３－１　教員研修センターの現状

（１） TTC 組織

TTC は、自動制御技術分野の教員研修を主たる目的としている。他に関連学校及び組織を対象に、自動制御分野の最新技術の研修・セミナーを行う目的も持つ。TTC 設置のための法令は制定されておらず、現状ではイズミール校の組織の一部として位置づけられている。TTC の目的を自動制御技術分野の研修に制限する 2007 年 1 月 22 日付け省内文書(付属資料 10)があり、これが TTC を他分野の教員研修などの一般研修に使用しない根拠となっている。TTC はイズミール校施設の一部であるため、独立した組織形態を取らず、副校長の一人がその運営管理に当たる予定である。前プロジェクトにおいて日本で研修を受けたカウンターパート 16 人が研修講師である。イズミール校の授業も行うので兼任である。また、これらの教員はほぼ全員モジュール作成の担当者でもある。以上の体制は今後も維持する予定との説明を国民教育省から受けている。教員人事、研修事業の計画、研修コースの作成、履修内容の検討等の業務が行われる際の国民教育省、イズミール校（TTC）及び普及校による組織的な関与あるいはそれぞれの所掌を表 5 に取りまとめる。

（２）TTC 施設の建設

TTC 施設は総工費 1,850,000YTL（約 1 億 5 千万円）により 2006 年に竣工した。7 階建て（地下 2 階）で建築面積は約 4,800 ㎡、セミナー室、演習室を備える。他に 60 人用宿泊施設がある。施設内にはコンピュータ及び宿泊施設什器備品が配備済みである。2007 年 1 月現在、各演習室に配備する機材は国民教育省に要請中である。

（３）管理運営

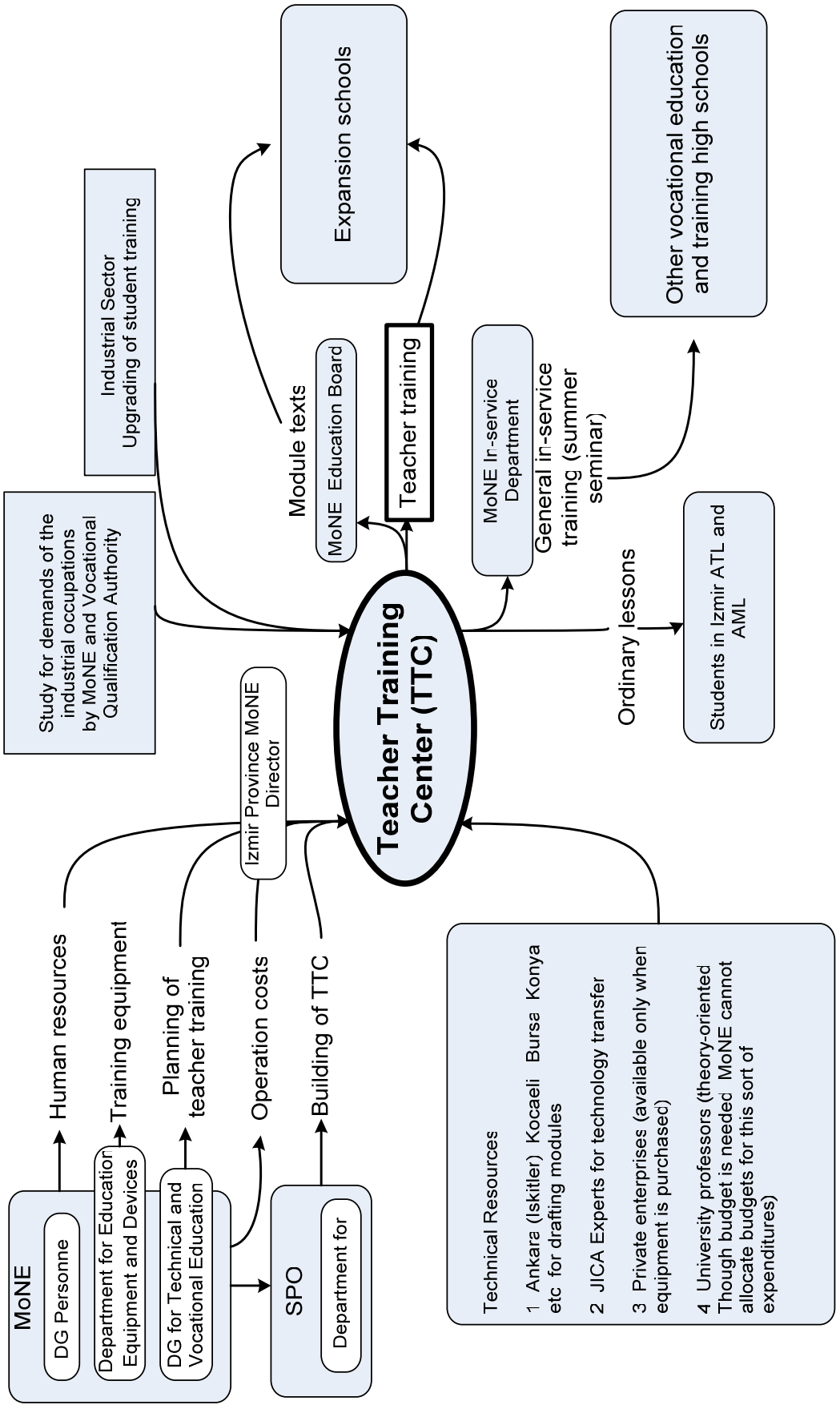
研修事業を計画し実施する上で、イズミール校 TTC と関連機関との間には種々の関係が生じる。関連機関には、人事や予算配分を決める国民教育省はもとより、技術面でのリソースとなるコンヤ校やイスキティール校等の協力校、研修の対象となる普及校、将来夏期セミナーを予定する隣接学科を有する学校などが含まれる。技術職業教育総局とイズミール校代表者の協力を得て、関連機関のマッピングを行った結果を図 8 に示す。

2006 年度の TTC 予算は 266,800US$であった。専ら機材費と設備費から成る。講師となる自動制御学科教員の人件費は学校の予算に計上されているので、TTC の主な運営予算費目は、施設維持費、光熱水費、労務費等になる。イズミール校全体で 2006 年度に、電気料 47,500 YTL（約 380 万円）、水道料 4,800 YTL（約 38 万円）、燃油費等で 29,700 YTL（約 240 万円）を支出している。また、2007 年度予算として、電気料 90,000 YTL（約 720 万円）、水道料 8,000 YTL（約 64 万円）、暖房費等で 70,000 YTL（約 560 万円）を要請している。他に研修事業費（研修生の旅費、食料費）があるが、これは国民教育省が直接予算化している。

表 5　教員研修センターの運営と関係機関の所掌

所掌	国民教育省	イズミール校・TTC	普及校
教員人事	• 学生数を踏まえて教員の定員を決定。 • 教員の採用と各校への配置を行う。	• 定員枠を満たす入学生の確保努力。 • TTC：イズミール校自動制御学科教員の枠内で講師の陣容が決められている。少数だが外部講師を招聘することもある模様。	• 定員枠を満たす入学生の確保努力。
経常予算（施設維持）	• 申請された予算を査定し予算額を決定。	• 光熱水費、保守維持費等の経常予算の申請を行う。 • TTC：イズミール校の一施設として光熱水費、保守維持費の予算が確保される。	• 光熱水費、保守維持費等の経常予算の申請を行う。
開発予算（建設・調達）	• 学科の普及・認可に伴い、所要施設の建設等の計画を定め、実施する。	• TTC に必要な機材を申請する。	• 学科教材の配備を受ける。教材仕様は本省が計画している。
経常予算（研修事業）	• 研修事業の計画を踏まえて予算を確保。	• 予算で確保された研修日数に対応する研修コースを実施する。	• 所定の研修計画に対応して受講する教員を推薦する。
一般教員研修の計画と実施	• 研修課題を一般校教員から募り、毎年の研修事業の内容と定員数を計画し、予算を確保する。	• 一般校と同様な立場で一般研修を受ける。 • 現在のところ TTC では一般教員研修事業は行われていない。	• 研修事業の実施について希望する内容を申請する。
自動制御学科教員研修の計画	• TTC を自動制御学科専用の研修施設として確保。 • 自動学科教員研修の予算枠を確保。	• 予算で確保された研修日数に対応して研修コースの回数や期間を計画する。	
自動制御学科研修コース内容の作成	• イズミール校のイニシアチブを尊重。	• 履修プログラムに適合する内容で研修コースを計画する。	• 事後に受講生による研修コース評価を行う。
自動制御学科の履修内容の検討と改訂	• イズミール校のイニシアチブを尊重。最終的な認可や承認は省の Board of Education が行う。	• 協力校とともに履修プログラムを作成した。 • 10 年生～12 年生の推奨カリキュラムを準備。 • モジュール・テキストを作成中。	• コンヤ校等協力校として履修プログラムやモジュールの検討に協力する学校がある。

図８　教員研修センターと関係組織



３－３－２　教員研修センターの課題

イズミール校自動制御学科教員 16 名の協力を得て、自動制御技術教育の普及を主題として関係者分析と問題分析を行い、その結果を問題系図（付属資料 11）に取りまとめた。

問題系図に示されるように、イズミール校 TTC は 2006 年に研修事業を開始したばかりで、研修計画、教材作成、組織運営体制の面で種々の課題を持つ。また、以上に加えて、国民教育省の課題ではあるが、対策の実施が決まれば TTC が担当することになる課題として、旧課程の自動制御学科、普及対象に含まれない 5 校、機械学科、電気電子学科、情報技術学科など自動制御技術の一部を履修科目に持つ隣接学科への対処などが挙げられる。これらを要約すると TTC の課題は以下のように示される。

- 演習用機材の不足（現在は学校の備品を使用）
- 講師が兼任であることに起因する担当授業との時間的重複
- 普及校で使用している教材（回路基板の類）との互換性
- 研修コースの運営体制
- 研修コースの評価体制
- モジュール作成の遅延（特に 12 年生用）、研修用テキスト作成の未着手
- 研修用テキストの作成

第４章　プロジェクト戦略

４－１　プロジェクト戦略の概要

４－１－１　アプローチの選択

トルコにおける自動制御技術教育の普及、引いては産業界の制御技能者人材需要への対応に向けて、本プロジェクトの目標をイズミール校の TTC による自動制御技術教育の研修体制の整備に置く。目標を達成するアプローチとして、TTC による教員研修コースの設計、実施、評価及び TTC の組織運営の改善強化を選定する。

2005 年 9 月から先発普及校で開始された新課程の自動制御学科運営のために、TTC では既に 2006 年当初に教員研修が実施に移されている。現行の研修事業を改善強化すると共に、自動制御技術教育普及の実現可能性を高めるために、中長期的視野に立って TTC 運営の改善を目指す。

４－１－２　プロジェクトサイト

イズミール校の TTC がプロジェクト活動を行うサイトとなる。TTC の建屋、電気機械設備はほぼ 2006 年に竣工整備されている。

４－２　プロジェクトの実施体制

４－２－１　プロジェクト実施機関

国民教育省の技術職業教育総局長が本プロジェクトの総括責任者である。同局は三部門に分かれており、そのうちの教員の一般研修等を担当する部門の長がプロジェクトの運営責任者となり、またイズミール校長が、プロジェクト実施に際し管理及び技術面の責任を持つ。現状では TTC はイズミール校の一部であって、独立した運営組織を持っていない。

プロジェクトに関係する各機関の調整及び協議のために合同調整委員会を設置する。主要な構成員は、国民教育省本省関係者、イズミール校長、副校長（TTC の管理責任者となる予定）、国家計画庁（State Planning Organization: SPO）および日本側関係機関である。

４－２－２　カウンターパートの配置

トルコ側が配置する本プロジェクトの管理要員及び TTC の研修講師がカウンターパートとなる。

第５章　プロジェクトの基本計画

５－１　上位目標

（１）スーパーゴール

要約	自動制御技術の技能者が育成され、トルコ産業セクターの人材需要が相当程度充足される。
達成指標	自動制御学科卒業生 XX 人が関連工場に就職する。

（２）上位目標

要約	普及校において、自動制御技術の職業教育訓練が有効に実施される。
達成指標	年間 XX 人の学生が自動制御学科を卒業する。

５－２　プロジェクト目標

要約	TTC における教員研修制度が確立される。
達成指標	(1) 研修コースに関する指標 ① 研修受講者のうち､XX%以上が自動制御学科の授業に TTC の研修が実際に役立つと評価する。 ② 受講生の XX%が研修コースを終了する。 ③ 研修修了試験の平均点 (2) TTC 組織運営に関する指標 ① 教員研修コースの管理手順が設けられる。 ② 研修コースの計画回数に対する実施回数 (3) 長期運営計画に関する指標 ③ TTC 長期運営計画が国民教育省により認められる。

５－３　成果と活動

TTC の研修事業について、計画、実施、評価及び長期運営計画の作成と、達成すべき成果を 4 件計画する。

成果 1	TTC の教員研修計画が策定される。
達成指標	① 教員研修コース ② 研修用テキスト数

活動：

1-1　普及校の自動制御学科の現状について、ベースライン調査を行う。

1-2　TTC の運営体制を見直す。
1-3　現行の中期教員研修計画（2006-2011）を改訂する。
1-4　モジュール・テキスト（教科書に相当するもの）を作成する。
1-5　教員研修コースを設定する。
1-6　教員研修用テキストを作成する。

成果 2	TTC の教員研修コースが実施される。
達成指標	教員研修コースの実施回数

活動：
2-1　教員研修センターに実習機材を整備する。
2-2　研修受講者に対する事前説明を実施する。
2-3　教員研修コースを実施する。
2-4　自動制御学科の運営に関するセミナーを実施する。

成果 3	TTC の教員研修コースが評価される。
達成指標	• 教員研修コースの評価が XX 回実施される。 • 普及校におけるモニタリングが XX 回実施される。

活動：
3-1　教員研修コースの評価基準及び評価手法を設定する。
3-2　教員研修コースに対する評価を適切に実施する。
3-3　普及校における自動制御学科の授業及び運営に関し、モニタリングを行う。
3-4　教員研修コースおよび研修テキストの見直しを行う。

成果 4	TTC の計画策定能力が強化される。
達成指標	TTC の長期運営計画が作成される。

活動：
4-1　TTC の中長期的役割を特定する。
4-2　TTC の長期運営計画を作成する。

５－４　活動計画（P0）

プロジェクトの実施期間を約 3 年とした。プロジェクト実施計画（PO）を付属資料 2 に示す。

５－５　投入

５－５－１　トルコ側投入

プロジェクト活動はトルコ側によって進められる。イズミール校においてカウンターパートを、また同校と国民教育省に管理要員を、それぞれ必要数配置する。カウンターパートである自動制

御学科の教員は、教員研修の他に同学科の学生を対象とした授業も担当していることから、イズミール校長は必要に応じて教員を増員し、カウンターパートの負担を軽減する。

プロジェクト実施に必要な事務室、什器備品、直通電話、電源設備を TTC に設ける。訓練活動に必要な基本的設備・機材を準備する。教員研修事業費を含むプロジェクト運営経費を負担する。

５－５－２　日本側投入

日本側は、トルコ側によって進められるプロジェクト活動を支援する。プロジェクト活動は、トルコ側によって作成された自動制御学科履修プログラム及びトルコ側によって調達された機材を用いて行われる。本プロジェクトは短期専門家派遣を中心とするが、派遣分野及び人員数は検討中である。機材調達は主にトルコ側によって行われ、プロジェクト実施の必要に応じて、TTC の現有機材を日本側で補足する。プロジェクト運営経費は主にトルコ側によって賄われるものの、必要に応じ一部負担する。

５－６　外部条件及び前提条件

５－６－１　外部条件

（１）成果達成のための外部条件

- 普及校自動制御学科の教員が必要な時期までに採用される。

（２）プロジェクト目標達成のための外部条件

- カウンターパートが TTC に定着する。

５－６－２　前提条件

- TTC の所要予算が適切に配布されること。
- カウンターパートが所要員数分配属されること。

第６章　プロジェクトの実施妥当性

６－１　妥当性

本プロジェクトの妥当性は、以下の点から高いと考えられる。

- トルコ政府の中期開発計画(2007～2009 年)において、人的資源の開発を通じた雇用機会の増大は、中期開発計画の主要部分として明確に位置付けられている。
- 製造業部門の人材ニーズに関する各種調査により、制御技術を備えた人材の不足が指摘されていることから、自動制御学科の教員研修を行う本プロジェクトは、トルコ製造業の人材ニーズに合致したものといえる。
- TTC は 2006 年より教員研修を実施しているものの、研修用テキストの未作成、研修コースの運営体制の未整備、研修コースの評価手法の未整備等の問題点が挙げられているため、本プロジェクトにより TTC の研修実施体制を確立することは、ターゲットグループである TTC 研修講師のニーズに合致している。
- 本プロジェクトは、JICA 国別事業実施計画の援助重点分野「中進国にむけた人材育成」に位置づけられる。

６－２　有効性

本プロジェクトは、以下の理由から有効性が見込まれる。

- 本プロジェクトは TTC における研修システム確立をプロジェクト目標としているが、同目標に関する指標として、教員研修コースに関する指標の他、センター運営に関する指標、長期運営計画に関する指標が設けられているため、プロジェクト目標は明確に設定されている。
- 本プロジェクトは、教員研修計画の作成及び実施、評価を通じて、センター研修実施体制を確立する他、センター長期運営計画の作成を通じて、センター計画策定機能を強化することから、プロジェクト目標を達成するために十分なアウトプットが定められている。

６－３　効率性

本プロジェクトは、以下の理由から効率的実施が見込まれる。

- TTC 建設及び機材調達、普及校における自動制御学科の機材調達は、トルコ政府の自国予算で進められており、また研修受講者の旅費等、研修実施経費は同じくトルコ政府の自国予算で賄われているため、プロジェクト活動のためのトルコ側の投入は適切に行われると見込まれる。
- 本プロジェクトで配置されるカウンターパートは、前プロジェクトにおいて自動制御技術に関する技術移転を日本人専門家から受けているため、前プロジェクトよりも少ない日本側の投入でプロジェクト活動の実施が可能と見込まれる。
- 国民教育省により、普及校自動制御学科の教員は必要人数雇用されているため、成果達成のための外部条件「自動制御学科の教員が適時配置される」は満たされる見込みである。

６－４　インパクト

本プロジェクトのインパクトは、以下のとおり予測される。

- 本プロジェクトは、普及校の自動制御学科教員約 300 名を対象に教員研修を実施することを主な目的としているが、自動制御学科の隣接学科である機械学科、電気学科、コンピュータ学科

等の教員を対象とした短期セミナーも行う 。

- トルコは、イスタンブール、イズミール等の大都市を有し、EU 諸国との結びつきが強く商工業の発展が著しい西部地域と、山岳地帯で経済開発から取り残された東部地域との間で大きな経済格差がある。本プロジェクトは、東部地域を含め、トルコ全国から選定された普及校 20 校における自動制御学科設立を支援することから、トルコ国内の地域間格差是正にも貢献するものと見込まれる。

６－５ 自立発展性

本プロジェクトの自立発展性は、以下の理由から高いと考えられる。

- トルコ国民教育省は、自国予算で TTC 建設、普及校における自動制御学科の機材調達を進め、2006 年に教員研修を独自に開始していることから、同省は本プロジェクトに強いイニシアティブを有している。
- 本プロジェクトにおいて、日本人専門家は、モジュール・テキスト及び教員研修用テキスト作成及びセンター運営に関する助言等、トルコ側によるプロジェクト活動の側面支援を行うため、トルコ側のオーナーシップは確保されている。

６－６ 結論

2001 年から 2006 年にかけて日本の協力によりアナトリア工業高校イズミール校に設立された自動制御学科を、トルコ国内の他の 20 校に普及することを目的として、本プロジェクトは、イズミール校に新設された教員研修センターにおける自動制御学科の教員研修を強化するものである。本プロジェクトは、トルコの製造業を支える人材育成を支援する点において、トルコの国家政策上の重点課題に応えるものであり、また日本による協力の成果を拡大普及する意味からも、実施の妥当性は極めて高い。

第７章　モニタリングと評価

７－１　プロジェクトマネジメント上の留意点

（１）　教員研修の内容について

TTC では今のところ、主にモジュール（テキスト）の内容説明や実習機器の使用法について研修を行っているが、教育科学に基づいた教授法や教材開発法等についても研修に取り入れる必要がないか検討が必要。また、3 ヶ月の研修期間が妥当か検討が必要である。

（２）　イズミール校と普及校の機材の相違について

イズミール校には、前プロジェクトにより日本製機材が主に供与されたが、普及校にはヨーロッパ仕様の機材が導入されている。普及校に導入された実習機器について、TTC の教員は十分熟知していない。そのため、TTC には普及校と同じ仕様の機材が導入される予定である。

（３）　TTC の長期戦略の策定について

2012 年以降の教員研修計画については、隣接学科教員の技術向上という目的は挙げられているものの、今のところ詳細は定まっていない。また、トルコにおいて、特定学科の教員研修を目的としたセンターの設立は初めてであるため、センターの中長期的な役割が定められていない。本プロジェクトを通じて、本センターの中長期的な役割について国民教育省と検討が進められるべきである。

７－２　モニタリング計画

計画第３年目当初（本計画が 2007 年 7 月に開始される場合は 2009 年 3 月頃）を目途として、中間評価調査を実施し、プロジェクト運営のコンサルティングを行う予定である。中間評価の結果によっては、必要に応じて協議の上、以降の計画内容の軌道修正を図る。計画終了時点の 6 ヶ月前（2010 年 3 月）以前に、終了時評価調査を実施する。終了時評価の主な目的は、本計画のプロジェクト目標の達成等を 5 項目評価の手順により評価すること、協力終了後もプロジェクト便益を持続させるための対策等を見出すこと、及び類似するプロジェクトの計画立案と実施の改善に活かすための教訓を引出すことにある。

付属資料

１．　プロジェクト・デザイン・マトリックス（PDM）

２．　プロジェクト全体計画（PO）

３．　2006 年教員研修

４．　普及校教員数及び学生数

５．　先発 11 校アンケート調査結果

６．　教授能力自己評価の結果

７．　自動制御学科履修プログラム

８．　自動制御学科の標準的カリキュラム

９．　自動制御学科のモジュールリスト

10.　TTC 設置に係る国民教育省文書

11.　問題系図

12.　業務内容

注）和文プロジェクト・ドキュメントでは付属書類は省略した。英文プロジェクト・ドキュメントを参照のこと。