

5. 校舎改造、教室のレイアウト、電源、カリキュラム、カウンターパート配置プラン等についての協議・確認事項メモ

<AC 220V distribution>

Power distribution line (AC220v) is to be installed from the PDB of the academic building to each laboratory. Termination of each laboratory is to be made with a PDB for a laboratory.

<AC 100V distribution>

AC100 distribution line is to be installed to each laboratory but details of the design is to be discussed later with the JICA team.

<3-phase PDB> (Power Distribution Board)

PDB for the machining center facility, and for the other basic workshop equipment, is to be installed in the mechanical workshop.

1. Outline of the academic course

(1) Two courses in the Izmir

Information machinery 30 students
Automatic Production Technology
Factory Automation System Technology
Information electronics 30 students
Industrial Product Design
Network Design for Automatic Control

(2) One course in the Konya

Information electronics 30 students
Industrial Product Design
Network Design for Automatic Control

2. Proposed academic curriculum

(1) Number of the study subject course hours of each year is ;

First year grade 20 course hours,
Second year grade 20 course hours,
Third year grade 20 course hours,
Forth year grade 25 course hours,
Total course hours for the engineering subject 85 course hours

(2) Choice of the subject

On the final year, a student can choose some subjects in accordance with his academic study plan, in order to specialize his engineering ability.

(3) Project study

On his final year, a student is to organize his study subject through his own idea, to deepen and to develop his own engineering capability as graduation thesis.

3. Major educational equipment to a laboratory and necessary room space

(1) Major educational equipment in each laboratory

We propose to prepare 8 laboratories (or practice rooms), where the educational equipment will be installed. Major equipment in each

laboratory is proposed as follows.

	IZM	KNY
(1)-1 Drawing room		
Drafter	+	+
(1)-2 Mechanical workshop		
Machining center facility	+	
A set of the equipment of the basic mechanical work	+	+
Tool	+	+
(1)-3 Multimedia laboratory		
A set of the equipment of the web technology	+	+
Multimedia type personal computer	+	+
A set of soft ware for the multimedia	+	+
CAD/CAM equipment	+	+
Audio visual facility	+	+
(1)-4 Programming laboratory		
Personal computer	+	+
A set of soft ware for the programming study	+	+
Audio visual facility	+	+
(1)-5 Electric workshop		
A set of equipment for the basic electric work	+	+
A set of equipment for the electric measuring equipment	+	+
The basic electric element/parts	+	+
Parts of analogue/digital work	+	+
Experimental power source with regulator	+	+
Voltage transformer	+	+
Connecting cables and connectors	+	+
(1)-6 Microcomputer/mechatronics		
Personal computer	+	+
Computer composition board	+	+
Computer assembling kit	+	+
Oscilloscope	+	+
Signal generator	+	+
Power source	+	+
Digital counter	+	+
Robot	+	+
A set of experimental mechatronics equipment	+	+

(1)-7 Sequence control laboratory		
Personal computer	+	+
PLC training unit	+	+
Programming tool	+	+
AC servo, inverter training unit	+	
(1)-8 Factory automation laboratory		
Personal computer	+	
Robot	+	+
MPS equipment for training	+	
Electronic printing board making facility	+	+

(2) Necessary room space for the equipment mentioned above

- (2)-1. Drawing room
- (2)-2. Mechanical workshop
- (2)-3. Multimedia laboratory
- (2)-4. Programming laboratory
- (2)-5. Electric workshop
- (2)-6. Microcomputer/mechatronics laboratory
- (2)-7. Sequence control laboratory
- (2)-8. Factory automation laboratory

4. Recommendation to the school

The Japanese team would recommend following items to be improved, to order of smooth installation of the equipment.

(1) Practice room modification

- (1)-1. Wall removal
- (1)-2. Installation of power distribution wiring, a power distribution board to a laboratory, and water supply
- (1)-3. Floor of a computer room rising up for its wiring
- (1)-4. Workshop modification

(2) Furniture/room-lighting facility provision

- (2)-1. Table/desk for the laboratory work of a student
- (2)-2. Shelf/locker for the equipment
- (2)-3. Proper room lighting for the laboratory work table/desk

(3) Other provision

- (3)-1. Basic tools which are commonly used for the laboratory works
- (3)-2. The most basic measuring equipment for electronics and power-electronics works

5. Counterpart training in Japan of the first generation

- (1) Number of trainee; 3 or 4
- (2) Training program is expected to begin August 2001.

6. Project inauguration

- (1) JICA project office will be open at Izmir on April 2001.
- (2) The six experts will arrive at their post on mid April to May 2001.
- (3) The expert is ;
 - Project leader,
 - Project coordinator,
 - Two academic experts of the information machinery division,
 - Two academic experts of the information electronics division,
 - Total 6 Japanese experts
- (4) All of them will stay at Izmir.

7. Others

Further important issues like

- (1) details of the modification of the school building ,
- (2) specification and quantity of the equipment ,
- (3) procurement of the equipment

will be discussed with the school management, after expert arrival at their post

	Subjects	1 grade	2 grade	3 grade	4 grade
C o m m o n	Basic Practice of Industrial works	5 (3)			
	Mathematics for engineering I	4 *(0)			
	Mathematics for engineering II		2 (0)		
	Basic practice for information technology	4 (4)			
	Mechanical works and engineering I	5 (2)			
	Mechanical works and engineering II		4 (2)		
	Technical drawing	2 (2)			
	Microcomputer Technology		8 (4)		
	Electricity & electronic engineering		4 *(0)		
	Computer aided design and manufacturing		2 (2)		
	Fundamentals of Computer network			6 (4)	
	Industrial management				2 *(0)
	Technical English				2 *(0)
S p e c i a l i t y	Sequence control technology			8 (4)	
	Basic technology for Factory Automation			4 (2)	
	Computer control technology			2 (2)	
	Computer network for FA system				4 (2)
	Automatic production technology				①(8) 5
	Factory automation(FA) system technology				②(8) 5
	Project study				③ 9 9
	Mechatronics			6 (3)	
	Feedback Control Technology			4 (2)	
	Computer programming			4 (4)	
	Sequence control technology				4 (2)
	Industrial Products design				④(8) 5
	Network design for computer system on automatic control				⑤(8) 5
	Project study				⑥ 9 9
	total number of credit	2 0	2 0	2 0	2 5

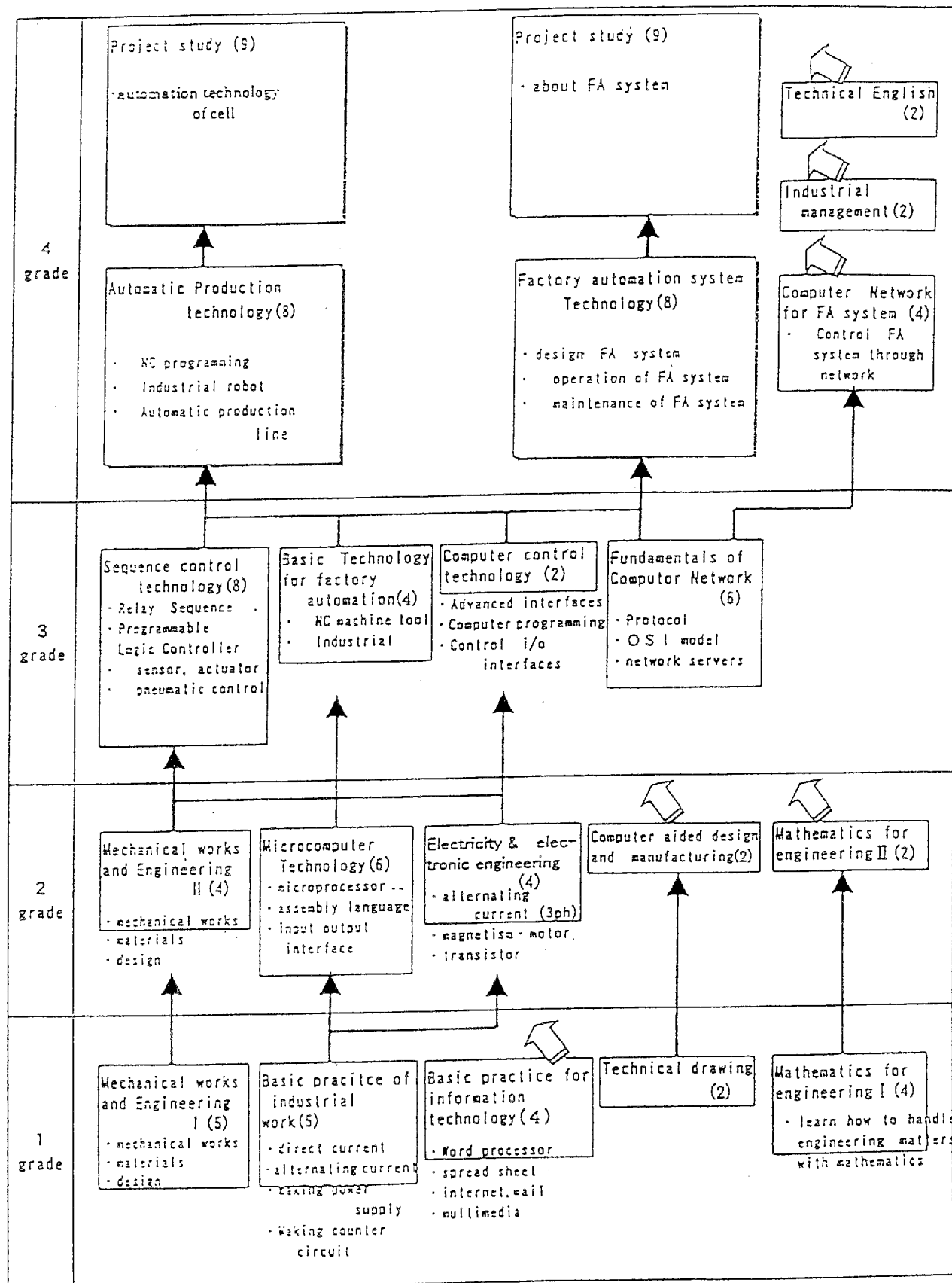
--- theoretical others--- theoretical and practice

This table is not including general subjects.

In 4 grade both departments have two courses. For example, students who select Automatic production technology(①)will do Project study(③) on related theme.

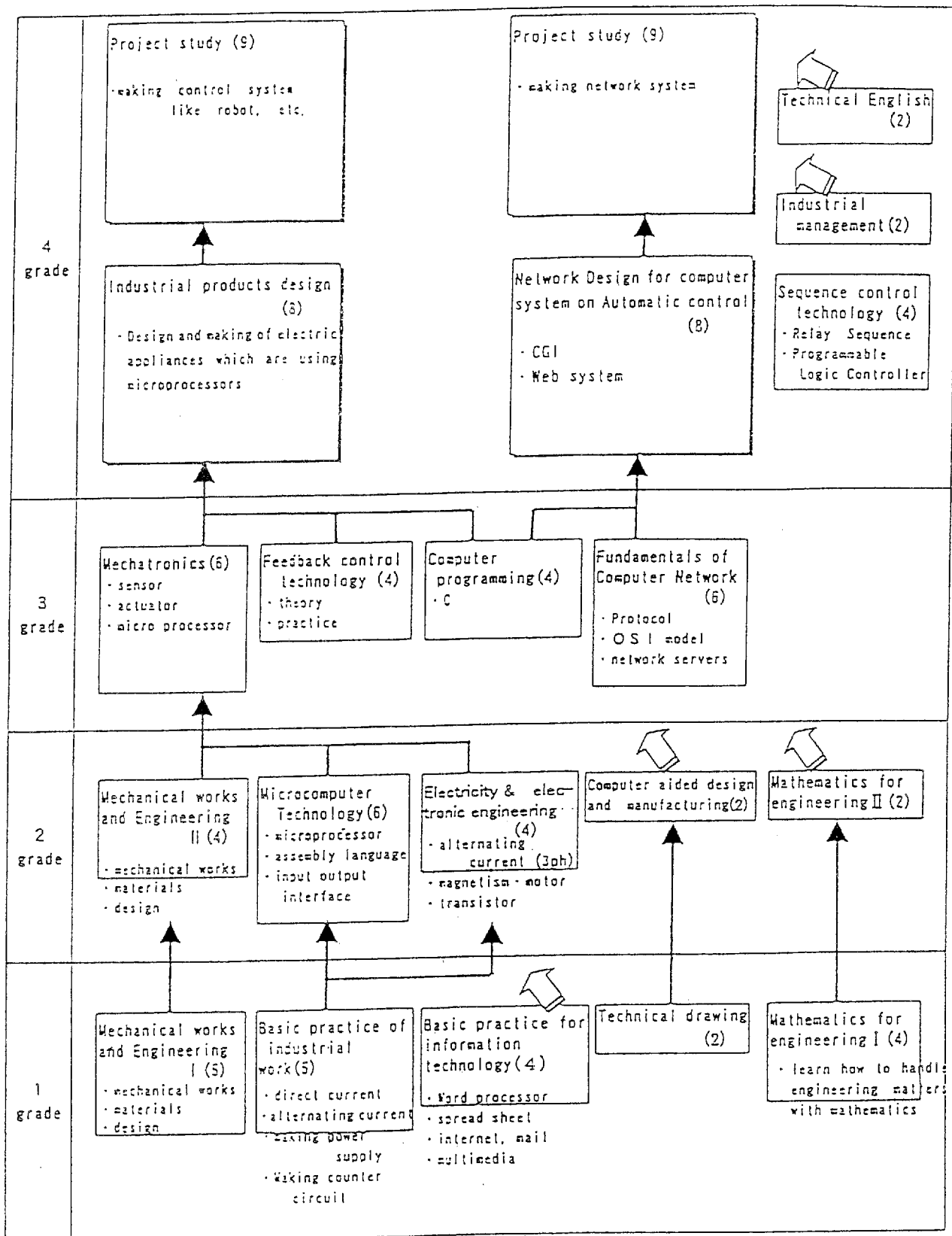
Related diagram of Information Machinery's subjects (DRAFT)

2000年9月14日



- ↑ indicate only main stream.
- box height shows the number of credit

Related diagram of Information Electronics' subjects (DRAFT)



- ↑ indicate only main stream.
- box height shows the number of credits

		第1位	第2位	実習	教室	実習工場	マルチメディア	プログラミング	電気電子	マイコン制御	シーケンス制御	FAシステム
		Total	Theoretical	Practice	Class room	Mechanical works shop	Multi media Lab	Progr amming Lab	Elect ric works hop	Micro compu ter Lab	Seque nce Lab	FA syste m Lab
							PC	PC				
1 g r a d e	Basic Practice of Industrial wo	5	2	3	2	2			1			
	I	4	4	0		4						
	Basic practice for information technology	4	0	4		0			4			
	Mechanical works and engineering I	5	3	2		3	2					
	Technical drawing	2	0	2		2						
2 g r a d e	II	2	2	0	2							
	Mechanical works and engineering II	4	2	2	2	2						
	Microcomputer Technology	6	4	4	2					4		
	Electricity & electronic engineering	4	4	0	4							
	CAD/CAM	2	0	2			2					
3 g r a d e	Fundamentals of Computer network	6	2	4	2						4	
	Sequence control technology	8	4	4	4							4
	Basic technology for Factory Automation	4	2	2	2							
	Computer control technology	2	0	2	0						2	
	Mechatronics	6	3	3	3							2
	Feedback Control Technology	4	2	2	2							
	Computer programming	4	0	4	0				4	2	3	
4 g r a d e	Insutrial management	2	2	0								
	Technical English	2	2	0								
	Computer network for FA syst	4	2	2								
	Automatic production technolo	8	3	5								
	Factory automation sysytem t	8	3	5								
	Project study (I. M.)	9	0	9								
	Sequence control technology	4	2	2								
	Industrial Products design	8	3	5								
	Network design for computer system on automatic control	8	3	5								
Project study (I. E.)	9	0	9									
Subjects total			54	82								

Relationship between SUBJECT and LABORATORY (Draft)

	Laboratory	Multimedia Lab	Programming Lab	Electric workshop	Microcomputer Lab	Sequence Lab	FA system Lab	Mechanical workshop
	Mainly Equipments	*Multimedia PC *Digital video recorder *Digital still camera *Internet Server *multimedia interface tool *Network	*PC *printer *Scanner *Web TV *Network	*drillier machine * Small type machine *regulated DC power supply *digital experiments parts *analog experiments parts *etching kit	*PC *Assemble PC *Oscilloscope *Electric measurement tool *Pocket computer kit & interface *one chip computer & interface *Computer controlled robot *Interface boards for PCI	*PC *PLC training kit *pneumatic simulation software *AC servo inverter training kits *PLC programming tool	*PC *MPS *Industrial Robots	*Machining center *Lathe *Grinder *Jig *Drilling machine *vice *Compressor *Surface plate *Gas welding machine *Arc welding machine
		マルチメディア室	プログラミング室	電気・電子工作室	マイコン・計測制御室	シーケンス制御室	FAシステム室	実習工場
	Basic Practice of Industrial works	○		○				○
	Mathematics for engineering I	○						
	Basic practice for information technology	○	○					○
	Mechanical works and engineering I							
	Technical drawing							
	Mathematics for engineering II	○						

	Mechanical works and engineering II							○
	Microcomputer Technology			○	○			
	Electricity & electronic engineering			○				
	CAD/CAM	○			○			
	Fundamentals of Computer network	○	○					
	Sequence control technology			○		○		
	Basic technology for Factory Automation					○	○	○
	Computer control technology			○	○			
	Mechatronics			○	○			
	Feedback Control Technology							
	Computer programming		○					
	Industrial management							
	Technical English	○				○	○	
	Computer network for FA system		○			○	○	
	Automatic production technology					○	○	

	Laboratory	Multimedia Lab	Programming Lab	Electric workshop	Microcomputer Lab	Sequence Lab	FA system Lab	Mechanical workshop
	Mainly Equipments	*Multimedia PC *Digital video recorder *Digital still camera *Internet Server *multimedia interface tools * Network	*PC *projector *Screen *Flash TV *Network	*Drilling machine * Small type machine *regulated DC power supply *digital experiments parts *analog experiments parts *etching kit	*PC *Assemble PC * Oscilloscope *Electric measurement tool *Pocket computer kit & interface *one chip computer & interface *Computer controlled robot *Interface boards for PCI	*PC *PLC training kit *pneumatic simulation software *AC servo inverter *PLC programming tool	*PC *MPS *Industrial Robots	*Machining center *lathe *Grinder *Jigsaw *Drilling machine *vice *Compressor *Surface plate *Gas welding machine *Arc welding machine
	Factory automation system technology					0	0	
	Project study (I. M.)	0	0	0	0	0	0	0
	Sequence control technology			0		0		
	Industrial Products design			0	0			
	Network design for computer system on automatic control							
	Project study (I. E.)							

Example of Time Table for 2 grade

Group		1	2	3	4	5	6
Mon	A	Mechanical works and engineering II (lecture)		Mechanical works and engineering II (p)		CAD / CAM	
	B						
				Microcomputer Technology			
Tue	A	Microcomputer Technology					
	B	Mechanical works and engineering II (p)		CAD / CAM			

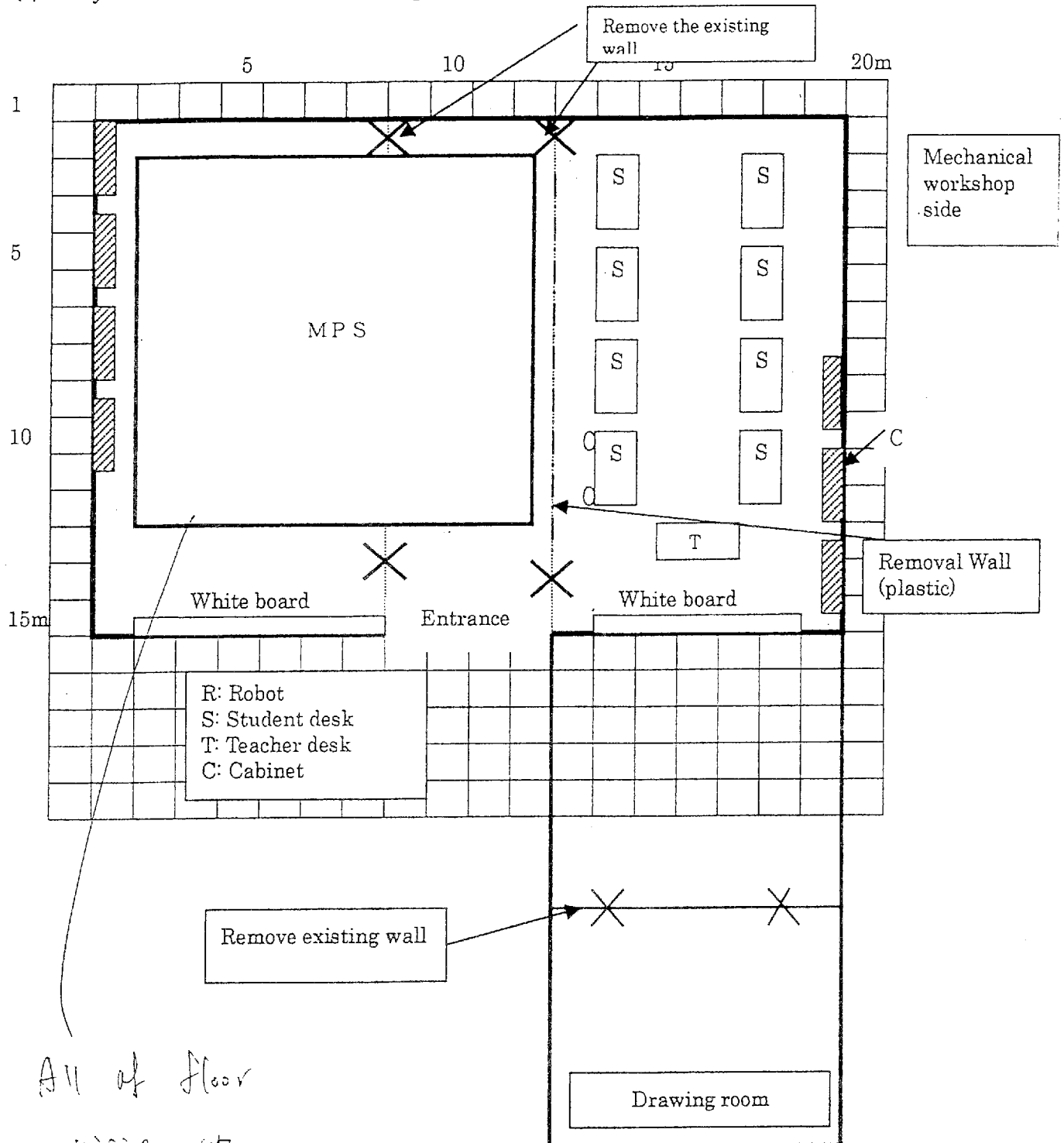
Example of Time Table for 1 grade

	Group	1	2	3	4	5	6	7
Mon	A	Basic Practice of Industrial works (lecture)			Basic Practice of Industrial works		Mechanical works and engineering I	
	B				Basic practice for information technology			
Tue	A	Mathematics for engineering I (lecture)		Basic practice for information technology				
	B			Basic Practice of Industrial works		Mechanical works and engineering I		
Wed	A	Mathematics for engineering I (lecture)						
	B							

MAIN FLOOR

(1) FA system Lab

(2) Sequence Lab

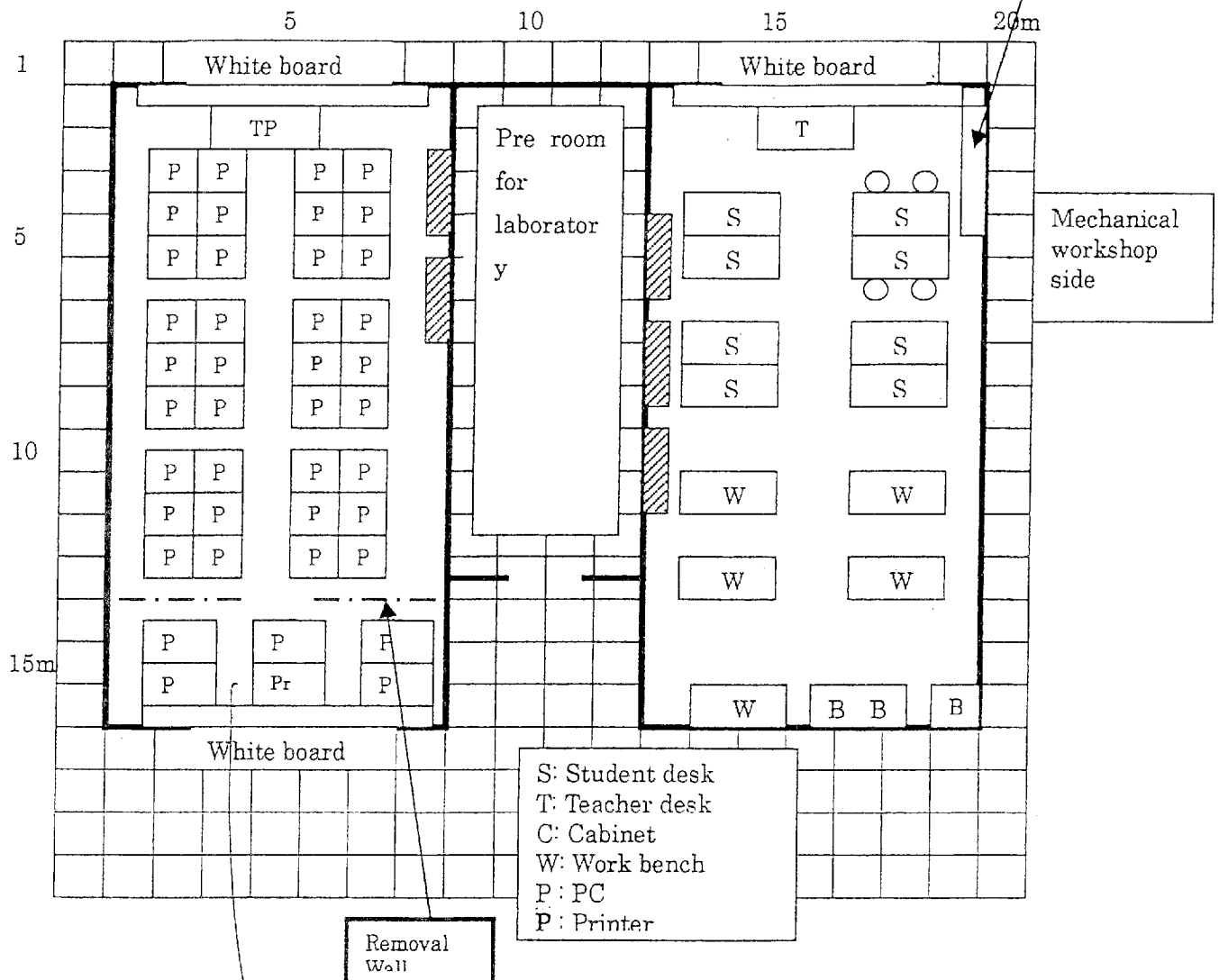


Modification (removal of wall) for the FA system lab and drawing room should take the load of the building into consideration, and regarding the location (that is, the level of floor) of the FA lab and drawing room need to be consulted with a specialized architecture.

Water supply with sink
Small ventilation fan

(3) Programming Lab

(4) Electric workshop

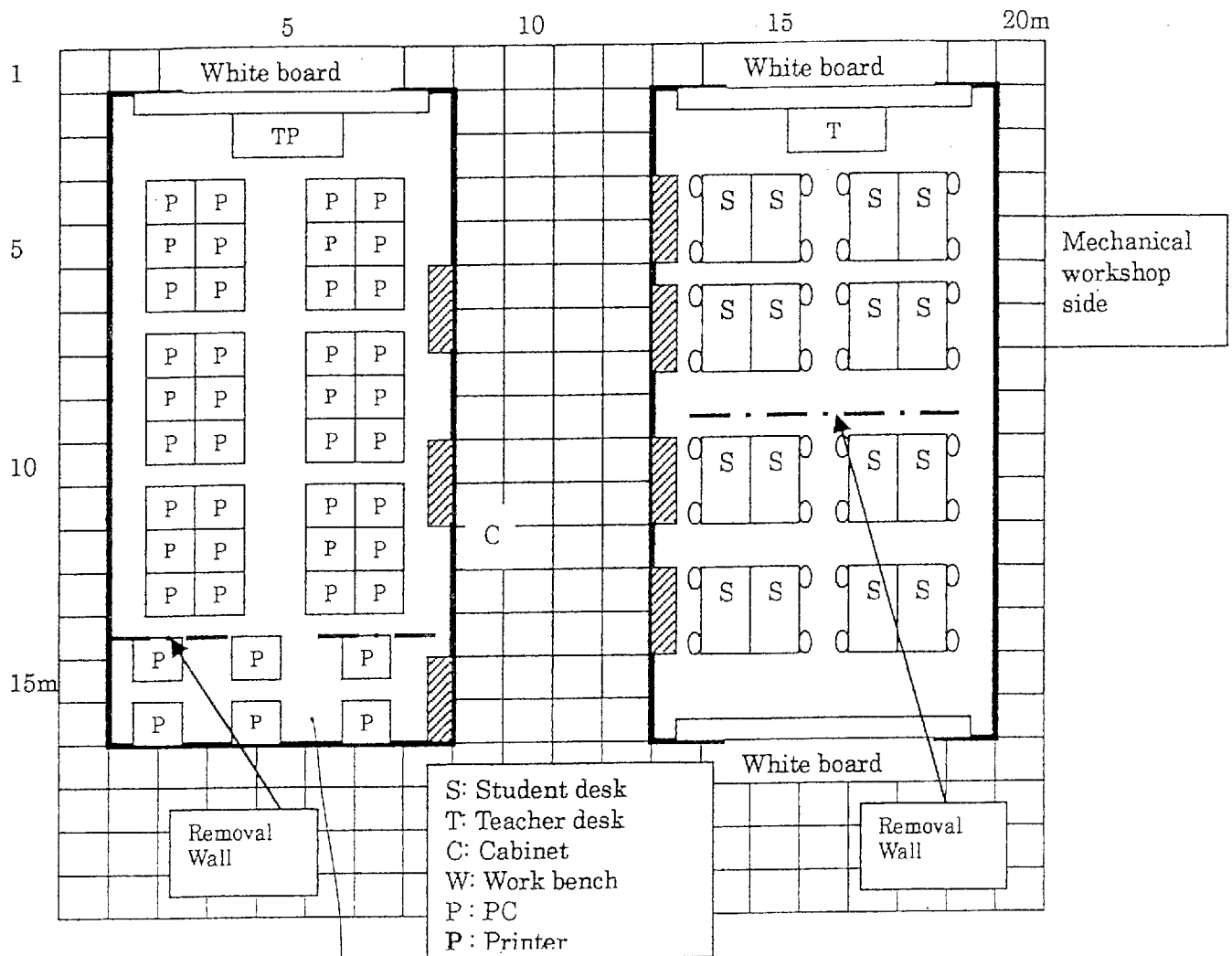


All of floor
rising up

Draft Proposal for Lab & Workshop Layout (IZMIR) No3

(5) Multimedia Lab

(6) Microcomputer Lab



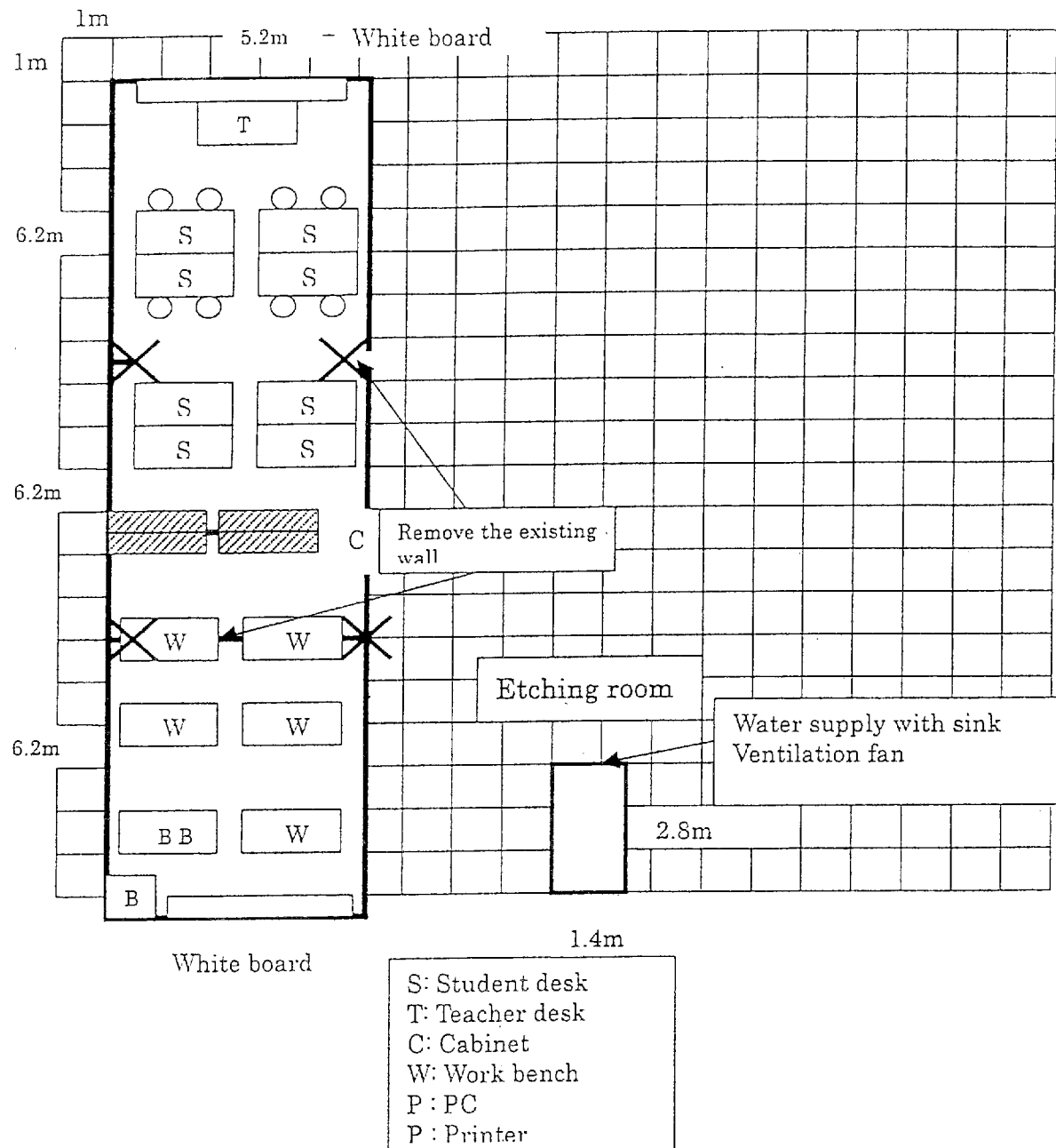
IZMIR	Explanation of laboratory	Raised floor	Load capacity	Water supply	Air supply	Exhaustion	AC 220V	AC 110V	Desk for student Size	Desk for teacher Size	Chair	Cabinet with lock (180*90*45)	White board (6m*1.2m)	Work bench Size	Air conditioner	Sun shade	Ceiling Type Electric Power Supply	Lighting
							A	A										
Mechanical Workshop	Practice mechanical basic subject and making teaching material	No		Yes	Yes	Yes	*1	0	8 (180*80)	1 (180*80)	18	6	4 (small type)	10 (180*80)				
FA system Lab	Integrated FA machines like robots, small sized CNC machine tools, and others. All machine connected each other by network.	Yes	>=200 kg/m2	No	Yes	Yes	100	50	8 (180*80)	1 (180*80)	18	8	1	0 (180*80)		Yes		Double
Sequence Lab	Study sequence control by PLC, PC, simulation software, and several kinds of machines controlled by PLC	Yes		No	Yes	Yes	100	50	8 (180*80)	1 (180*80)	18	6	1	0 (180*80)	Yes	Yes		Double
Electric workshop	Several kinds of machine for electric work like drill, Power supply, tester, and basic electric experiment parts	No		Yes	No	Yes	100	50	8 (180*80)	1 (120*80)	18	8	1	6 (180*80)		Yes	Yes	Double
Programming Lab	PC connected each other for programming practice, and some Audio Visual equipments like projector, digital video recorder	Yes		No	No	Yes	100	50	36 (90*80)	1 (120*80)	35	4	2	6 (180*80)	Yes	Yes		Double
Multimedia Lab	Add to what was described above. PC equipped with the multimedia function, and PC peripheral equipments (printer, scanner, digital still camera, etc).	Yes		No	No	Yes	100	50	36 (90*80)	1 (120*80)	35	6	1	6 (180*80)	Yes	Yes		Double
Microcomputer Lab	Several kinds of electric measurements tools and chip computer, interface boards. You can study microcomputer and mechatronics	No		No	No	Yes	100	50	16 (180*80)	1 (120*80)	35	8	2	0 (180*80)	Yes	Yes	Yes	Double
									112	6	159	40	8	18				

*1 Power supply should be same as existing mechanical work shop

*2 A new PDB (Power Distribution Board) should be provided exclusively for the Project after the arrival of the Japanese experts.

*3 All reconstruction should be start after the arrival of the Japanese experts.

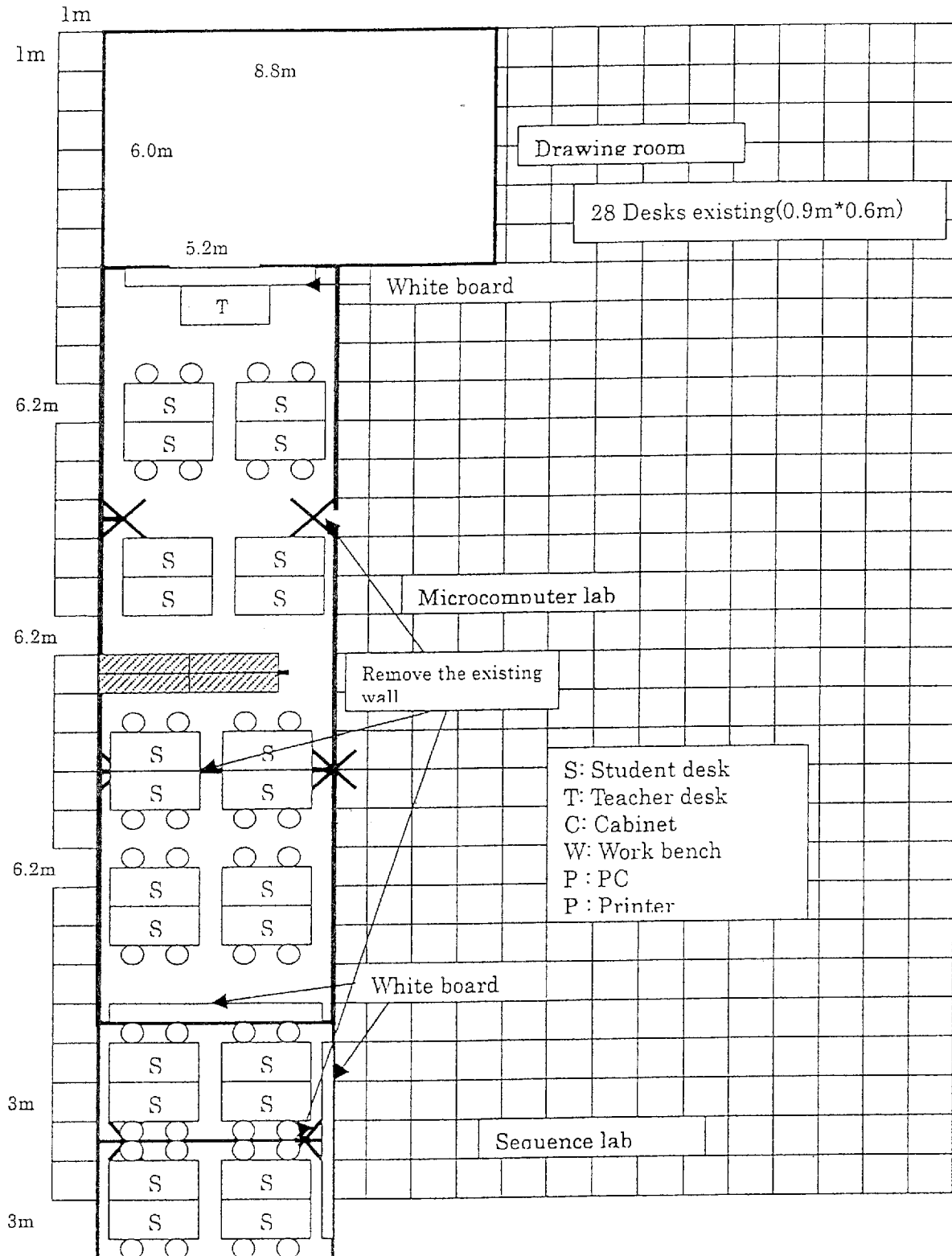
(1) Electric workshop (3F)



(2) Drawing room (2F)

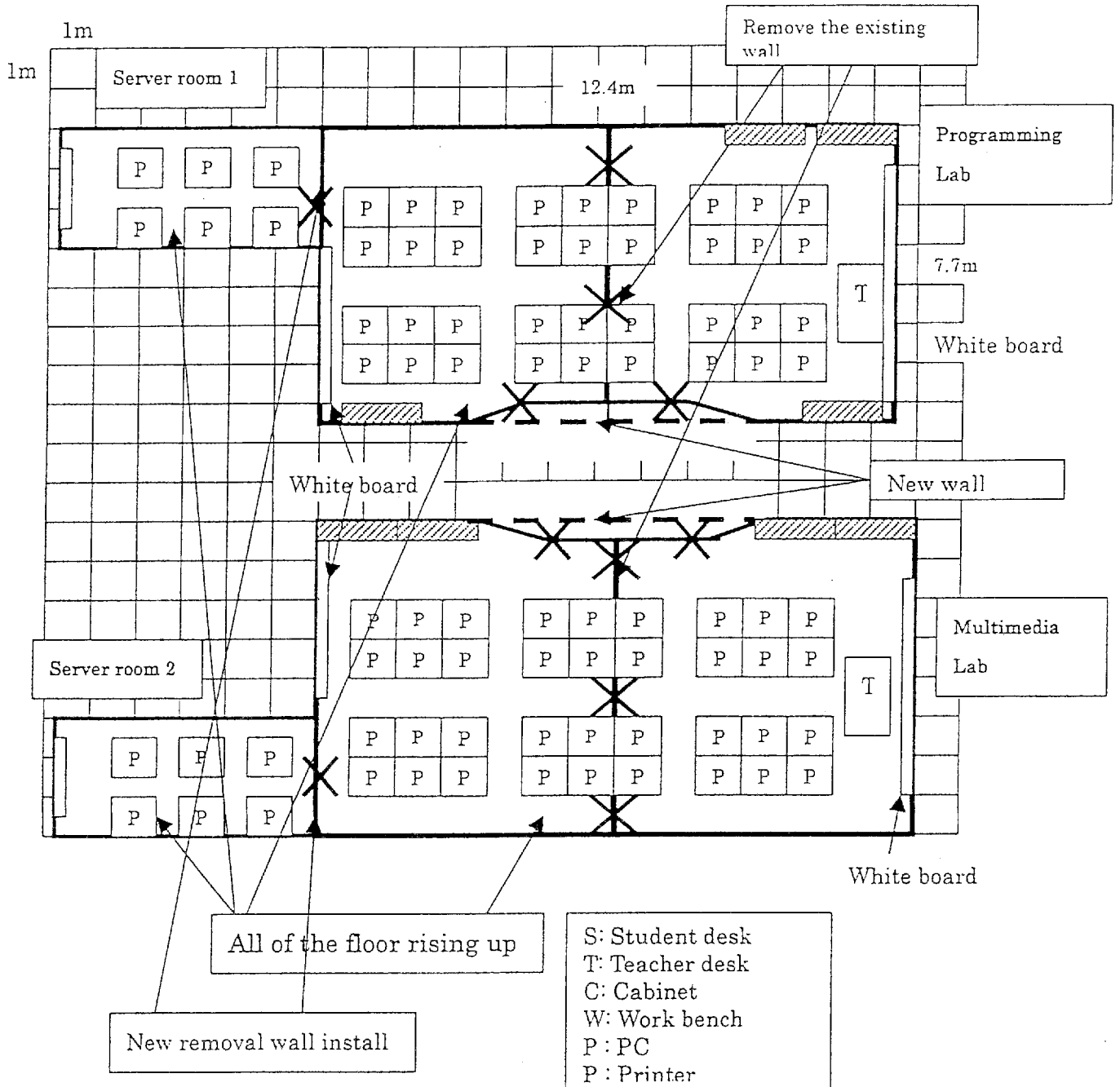
(3) Microcomputer lab (2F)

(4) Sequence lab (2F)



(5) Programming lab(2F)

(6)Multimedia Lab(2F)



*1 New Mechanical workshop located in the existing mechanical workshop.

KO NYA	KO NYA	Explanation of laboratory	Raised floor	Load capacity	Water supply	Air supply	Extensio n telephon e	AC220V (single)	AC 110V	Desk for student Size	Desk for teacher Size	Chair	Cabinet with lock (180*90* 45)	White board (6m*1.2 m)	Work bench Size	Air condition er	Sun shade	Ceiling Type Electric Power Supply	Lighting
電気・電	Electric workshop	Several kinds of machine for electric work like drill,Power supply,tester,and basic electric experiment parts	No		Yes	No	Yes	100	50	8 (180*80)	1 (120*80)	18	6	2	6 (180*80)		Yes	Yes	Double
マイコン・制御	Microcom puter Lab	Several kinds of electric measurements tools and chip computer,interface boards.You can study microcomputer and mechatronics	No		No	No	Yes	100	50	16 (180*80)	1 (120*80)	35	4	2	0 (180*80)	Yes	Yes	Yes	Double
シーケンス	Sequencer Lab	Study sequence control by PLC,PC,simulation software,and several kinds of machines controlled by PLC	No		No	No	Yes	100	50	8 (180*80)	1 (180*80)	18	6	1	0 (180*80)	Yes	Yes		Double
マルチメディア	Multimed ia Lab	Add to what was described above.PC equipped with the multimedia function.and PC peripheral equipments(printer,scanner,d igital still camera,etc).	Yes		No	No	Yes	100	50	36 (90*80)	1 (120*80)	35	4	2	0 (180*80)	Yes	Yes		Double
プログラミング	Program ming Lab	PC connected each other for programming practice,and some Audio Visual equipments like projector,digital video recorder	Yes		No	No	Yes	100	50	36 (90*80)	1 (120*80)	35	4	2	0 (180*80)	Yes	Yes		Double
サーバ 1	Server room 1		Yes		No	No	Yes	Share with Program ming lab	Share with Program ming lab	6 (90*80)	1 (120*80)	10	1	Small type 1	0	Yes	Yes		Double
サーバ 2	Server room 2		Yes		No	No	Yes	Share with Multimed ia lab	Share with Multimed ia lab	6 (90*80)	1 (120*80)	10	1	Small type 1	0	Yes	Yes		Double
実習工場	Mechanic al Worksho p	Practice mechanical basic subject and making teaching material	No		No	Yes	Yes	3phase 50A 1phase 50A	0	8 (180*80)	1 (180*80)	18	6	4(small type)	10 (180*80)				
										124	8	179	32		16				

*1 A new PDB(Power Distribution Board)should be provided exclusively for the Project after the arrival of the Japanese experts.

*2 All reconstruction should be start after the arrival of the Japanese experts.

*3 Mechanical Workshop should be located in the existing mechanical workshop.

must : $\geq$ Japanese Experts

Suggestion CP18 · 40h

			1st year					2nd year					3rd year					4th year					5th year					
			2001					2002					2003					2004					2005					
			1	3	5	7	9	11	1	3	5	7	9	11	1	3	5	7	9	11	1	3	5	7	9	11	1	3
1	Izmir	IE CP1							CP Japan	CP			Teaching						CP				Teaching					Teaching
2		CP2							CP				CP Japan	CP					CP				CP					Teaching
3		CP3							CP				Teaching						CP Japan	CP			Teaching					Teaching
4		CP10											CP						Teaching				CP Japan					Teaching
5		CP13																	CP Japan				Teaching					Teaching
6		CP15																	CP				CP Japan	CP				Teaching
7		CP17																				CP						Teaching
8																												
9		load hours											29						59				92					146
10		teachers											2						2				3					7
11		average load hours/teacher											15						30				31					21
12																												
13	IM	CP4							CP Japan	CP			Teaching						CP				Teaching					Teaching
14		CP5							CP				CP Japan	CP					Teaching				Teaching					Teaching
15		CP6							CP				Teaching						CP Japan	CP			Teaching					Teaching
16		CP11											CP						Teaching				CP Japan	CP				Teaching
17		CP16																	CP				CP Japan	CP				Teaching
18		CP18																				CP						Teaching
19																												
20		load hours											29						59				91					145
21		teachers											2						2				3					6
22		average load hours/teacher											14.5						29.5				30.3					24.2
23																												
24	Total	load hours											58						118				183					291
25		teachers											4						4				6					13
26		average load hours/teacher											14.5						29.5				30.5					22.4
27		vacant hours / teacher							standard= 40 hours				25.5						10.5				9.5					17.6
28		total vacant hours											102						42				57					229
29		Potential CP							1 CP / 40 vacant hours				2.6	2.6	2.6	2.6	2.6	2.6	1.1	1.1	1.1	1.1	1.1	1.4	1.4	1.4	1.4	5.7
30																												
31		Fulltime CP			6	4	4	4	6	6	6	6	4	2	2	2	4	4	7	4	4	4	7	7	7	2	2	0
32		Fulltime CP + Potential CP			6	4	4	4	6	6	6	6	6	6	6	6	6	6	8.1	5.1	5.1	5.1	8.1	8.1	8.4	3.4	3.4	5.7
33		Training in Japan			2	2	2						2	2	2				3	3	3				4	4	4	
34																												
35	Konya	IE CP7							CP Japan	CP			Teaching						CP				Teaching					Teaching
36		CP8							CP Japan	CP			Teaching						CP				Teaching					Teaching
37		CP9							CP				CP Japan	CP					Teaching				CP					Teaching
38		CP12											CP Japan	CP					Teaching				CP					Teaching
39		CP14																	CP Japan				Teaching					Teaching
40																												
41		load hours											29						59				92					146
42		teachers											2						2				3					5
43		average load hours/teacher											14.5						29.5				30.7					29.2
44																												
45		Fulltime CP			3	1	1	1	3	3	3	3	2	0	0	0	2	2	3	2	2	2	3	3	2	2	2	0
46		Training in Japan			2	2	2						2	2	2				1	1	1							
47																												
48	Total	Fulltime CP			9	5	5	5	9	9	9	9	6	2	2	2	6	6	10	6	6	6	10	10	9	4	4	0
49		Fulltime CP + Potential CP			9	5	5	5	9	9	9	9	8.6	4.6	4.6	4.6	8.6	8.6	11.1	7.1	7.1	7.1	11.1	11.1	10.4	5.4	5.4	5.7
50		Training in Japan			0	4	4	4	0	0	0	0	0	4	4	4	0	0	0	4	4	4	0	0	0	4	4	0

CP Assignment Plan

			01	02	03	04	05
Izmir	IE		3	4	6	7	7
	IM		3	4	5	6	6
Konya	IE		3	4	5	5	5
Total			9	12	16	18	18
Original Plan			9	12	14	14	14
Addition			0	0	2	4	4

desirable : ≥ Japanese Experts

Condition : Konya CP stay at Izmir

must : ≥ Japanese Experts