

サウディ・アラビア王国  
リアド電子技術学院プロジェクト  
終了時評価報告書

平成6年2月  
(1994年2月)

国際協力事業団  
社会開発協力部

サウディ・アラビア王国リアド電子技術学院プロジェクト終了時評価報告書

平成6年2月

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サウディ・アラビア王国  
リアド電子技術学院プロジェクト  
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28373

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## 序 文

サウディ・アラビアでは、1970年代からそれまでの石油モノカルチャー経済から脱皮するため、石油化学製品等の製造・輸出をめざす工業開発を開始しました。この工業化推進に伴い熟練技術労働者の需要が急増しました。

このためサウディ・アラビア政府は、電気電子分野の中堅技術者を育成するための技術学院創設を計画し、この計画に対する技術協力を日本に要請してきました。

この要請に対し、日本政府は昭和49年1月に事前調査を実施し、さらに同年6月の実施協議調査団によるR/D署名により協力が開始されました。

本件サウディ・アラビアリアド電子技術学院プロジェクトの協力期間は、R/Dにおいて学院が開校するまでと取り決められましたが、サウディ・アラビア側負担による施設建設等に時間がかかり、平成5年9月ようやく開校の運びとなりました。

今般、本件プロジェクトの協力期間終了を平成6年3月に控え、これまでの技術移転状況ならびにプロジェクトの達成状況を調査・評価するとともに、今後の自立的・継続的発展の観点からもあわせて評価し、また、終了後の対応について関係者と協議するために終了時評価調査団を派遣しました。

本調査団は、一連の評価調査結果をサウディ・アラビア側関係者ととも合同評価レポートとして取りまとめ、ミニッツとともに署名しました。

本報告書は、同調査団の調査・協議の内容および評価の結果を取りまとめたものであります。

最後に、本調査団派遣にあたり、ご協力いただいた外務省、文部省、国内協力機関および現地での調査活動をご支援いただいた関係者の皆様に心よりの感謝の意を表する次第であります。

平成6年2月

国際協力事業団

理事 佐藤 清

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## 第1章 終了時評価調査団の派遣

### 1-1 調査団派遣の経緯と目的

本プロジェクトは、サウディ・アラビアにおける工業化推進に必要な熟練技術者の需要に対し、電気電子分野の中堅技術者を育成する技術学院の設立基盤整備について1974年6月から協力を行ってきた。1994年3月末日をもって協力期間が終了するにあたり、これまでの技術移転状況ならびにプロジェクトの達成度の評価等に関する調査を行うため、また技術学院の短大昇格構想に対する協力についてサウディ・アラビア側と協議するため終了時評価調査団を派遣した。

### 1-2 調査団の構成

担当分野	氏名	現職
団長（総括）	鈴木 重之	外務省経済協力局技術協力課企画官
職業教育行政	岩本 宗治	文部省初等中等教育局職業教育課教科調査官
高等教育行政	尾藤 広幸	文部省高等教育局専門教育課係長
自動制御 ／工業電子	青木 輝壽	東工大付属工業高校教諭
計画評価	蔵本 文吉	国際協力事業団社会開発協力部社会開発協力 第二課長
通訳	石川 義次	日本国際協力センター研修監理員

なお、短期専門家（電気通信、コンピュータ、オーディオビデオ）として、鈴木 清（東京都立工業技術教育センター）が本件調査に参加した。

1-3 調査団の日程

調査期間：1994年1月20日～1月29日

日順	月 日	曜日	
1	1 / 20	木	移動（東京→パリ）
2	21	金	移動（パリ→リアド）
3	22	土	日本大使館・JICA事務所との打合せ 技術学院訪問
4	23	日	技術教育職業訓練庁(GOTEVOT)協議
5	24	月	GOTEVOT 協議
6	25	火	GOTEVOT 協議
7	26	水	GOTEVOT 協議およびミニッツ署名 日本大使館・JICA事務所への報告
8	27	木	資料整理
9	28	金	移動（リアド→パリ）
10	29	土	移動（→東京）

1-4 主要面談者

(1) サウディ・アラビア王国側

Mr. Abdulmohsin Al-Thuwaini	技術教育職業訓練庁(GOTEVOT)総裁
Dr. Ali Al-Ghafis	技術教育局長
Mr. Ali Al-Bakri	管理局長
Mr. Hussein Al-Dahlawi	電子技術学院校長
Mr. Ali Al-Atni	副校長
Dr. Saeed Milah	リアド技術短大教授
Dr. Fahd Al-Tuwaijry	
Dr. Turki Al-Turki	

(2) 日本側

大田 博	在サウディ・アラビア王国日本大使館特命全権大使
大木 正充	公使
黒川 純一良	二等書記官
佐藤 忠	JICA事務所 所長
和田 康彦	所員
大島 正弘	プロジェクト専門家 チームリーダー
塩谷 和	シニア・アドバイザー

廣田 嘉男	プロジェクト専門家	電気基礎
池内 淳	”	機械基礎
伊落 崧	”	オーディオ・ビデオ
柏木 考平	”	電子基礎
土屋 堯	”	工業電子
宮本 修	”	コンピュータ技術
井手 三男	”	電気通信
荻野 登	”	自動制御
石垣 滋樹	”	業務調整

## 第2章 プロジェクトの概要

### 2-1 プロジェクトの背景

サウディ・アラビアでは、国家開発計画において重点項目としている非石油産業の振興および産業の近代化と多様化を推進していくために必要となる自国民の、特に教育および職業訓練による技術を持った若年層の人的資源開発の必要性が謳われてきた。

この産業の近代化および多様化を進めていくにあたり、土台となる電気電子分野が特に求められ、この分野での先端をいく日本からの技術指導に期待が寄せられ、この中堅技術者育成について要請が行われた。

### 2-2 プロジェクトの目的

電気電子分野における中堅技術者を育成、教育する日本の工業高校レベルの技術学院を設立し、卒業後ただちに実社会で役立ち得る人材の育成のための実技重視の訓練・教育を行う学院の運営基盤を整備する。

具体的には、中学卒業者を対象とする3年教育を5学科（①工業電子、②電気通信、③自動制御、④コンピュータ技術、⑤オーディオ・ビデオ）において、在校生の定員約630名規模の学校を設立し、教育・訓練を実施する。

### 2-3 プロジェクトの実績

日本からの協力は、1974年1月の事前調査、同年6月の実施協議調査を経て、1974年6月12日から協力が開始された。協力当初は、サウディ・アラビア側負担による学院建設に伴う設計段階での助言等が行われたが、この建設自体に遅れが生じ、わが方からのカリキュラム・実習指導書作成指導およびサウディ・アラビア人教官の指導等による本格的協力活動は、1988年からとなった。

専門家派遣はこれまで延べ50名、研修院受入れは19名（表4：p12～15参照）、機材供与（資料4：p81～94参照）は5億7300万円の協力を実施してきている。

サウディ・アラビア側による本プロジェクトへの投入実績としては、約100億円の施設および機材の設置や教官の配置等が行われ、ようやく1993年9月に学院が開校された。

## 第3章 調査結果概要

### 3-1 総括

(1) 日本およびサウディ・アラビア側双方による合同評価の結果、協力内容であるカリキュラム開発、教科書・実習指導書（1年次）の作成などはほぼ完了されているが、2・3年次の実習指導書の作成およびサウディ・アラビア側教官への教科指導技術の移転が実施されていないことから学院は昨年9月に開校されたとはいえ、残されている項目への協力を完結することによって技術移転が完了することから、未実施の点へのフォローアップ協力が必要であると判断された(表1～4：p6～15およびミニッツ：p16参照)。

(2) 短大昇格については、全体として何がなされなければならないか、そのうちサウディ・アラビア側が日本側に望んでいる具体的協力内容を明らかにすべく種々の討議が行われた。

その結果、サウディ・アラビア側は日本の短大教育をサウディ・アラビアの現況に適合した形（実習重視）で導入したい意向であること、そのためのカリキュラム作成、教育内容（教科書、参考書の導入を含む）および実習内容の決定、ならびにそれに必要な機材のリストアップ等につき協力を得たいことが判明した。

学科構成は、工業電子学科、自動制御学科、電気通信学科、コンピュータ技術学科、医療電子学科の5学科とし、前二者については、現リアド工業短大の既存学科の再編成（ドイツ方式との関係は一切考慮する必要なし）、後三者は新設する。医療電子学科を除き、これらの学科は現行のリアド電子技術学院に準じている。なお、医療電子学科については、日本側として協力不可能なる旨述べおいたが、サウディ・アラビア側は履修内容等について具体的構想を練ったうえで、改めて日本側に相談したい旨述べた。また、研修についてはサウディ・アラビア側教員が日本で最新の電子技術に触れることおよび大学、短大の視察等を含めた研修プログラムを希望した。

サウディ・アラビア側は、本件短大昇格について日本側が協力できるか否かの回答を本年（1994年）7月中までに行うよう強く要請していた。

表1 活動評価結果一覧

調査項目	現状および達成度	残された課題・問題点など
1. 教科書	<ul style="list-style-type: none"> <li>・1年次用 完成</li> <li>・2年次用 完成</li> <li>・3年次用 94年3月完成予定</li> </ul>	
2. 実習機材の設置	<ul style="list-style-type: none"> <li>・1年次用 設置済 (ほとんどが日本側供与機材)</li> <li>・2年次用 未設置(購入済)</li> <li>・3年次用 未設置(未購入)</li> </ul>	<ul style="list-style-type: none"> <li>・94年2月 専門家チームよりサウディ・アラビア側に機器リスト(仕様書等)提出予定。</li> </ul>
3. 実習指導書の作成	<ul style="list-style-type: none"> <li>・各実習項目の「ガイドライン」は、サ側に提出済み。</li> <li>・1年次用は、専門家により完成。 (日本で研修をしたカウンターパート研修員の協力があつた)</li> <li>・2年、3年次用は、実習機器未設置のため未定。</li> </ul>	<ul style="list-style-type: none"> <li>・2年、3年次用実習指導書は、機器の設置、学習進度に合わせて、順次作成する必要がある。</li> <li>・この作業は、現地専門家の指導により、サ側教員が行うのが望ましい。</li> </ul>
4. 教科指導技術移転	<ul style="list-style-type: none"> <li>・教科指導等に関する技術移転は、現地専門家により積極的に進められており、その成果が徐々に表れている。</li> <li>・サ側の専任教員数が不十分であるので、移転の速度は遅い。</li> </ul>	<ul style="list-style-type: none"> <li>・この技術移転は、日本流の工業教育を行ううえで、最も大切な業務のひとつである。この業務を行ううえで次のような点に配慮する必要がある。</li> <li>・サ側に対し、十分な数の専任教員の配置を要望する。</li> <li>・2年、3年次に関しては、より専門性が求められるので、各科とも複数の日本側現地専門家の配置が望ましい。</li> </ul>
5. 実習教員養成	<ul style="list-style-type: none"> <li>・第1～3次までの実習教員(カウンターパート研修員)合計14名の研修を終了した(各2年間)。</li> <li>・第4次研修員(4名)は、1年間の研修を終了した。</li> </ul>	<ul style="list-style-type: none"> <li>・第4次研修員の残り1年間の研修を行う。</li> <li>・第5次研修員の受入れ。</li> </ul>

表2 活動結果一覧

女子理事項目		担当	現在達成度	94年3月末 見込み	サ側の体制	継続 (○は必要性を示す)	
A サ側調達機器(土屋)	①3学年機器リスト ・機器レイアウト ・付帯条件記述	AC	萩野	50%	完了		
		AV	伊落	50%	完了		
		CT	宮本	70%	完了		
		IE	土屋	80%	完了		
		TC	井手	30%	完了		
		CAD	柏木	100%	完了		
		仕様書印刷	土屋			完了	
	点検	土屋 廣田			完了		
	データ交換(専門家→サ側)	土屋			完了		
	入札後の技術仕様キック	土屋 廣田					○
	②センター機器リスト ・入札後の技術仕様キック も含む	コンピュータ					○ これまでに第一次リストは提出済み。 リスト更新業務が必要。 入札後の据付け運転研修は業者・サ側にまかせる。
		オーディオ					
		CCTV					
		カゾネ					
カメラ							
印刷室							
③CAI機器リスト	土屋	100%	完了				
④数学科機器リスト	土屋	100%	完了				
B 実習指導書(井手)	①2学年分 ・原稿完成	FS-1-2	伊落	50%	完了		
		FS-1-2	宮本	80%	完了		
		FS-2-2	廣田	80%	完了		
		FS-4	井手	20%	完了		
		FS-5	柏木	20%	完了		
		FS-8	土屋	20%	完了		
		FS-9	萩野	30%	完了		
	内容キック	井手 廣田			完了		
	修正	各人			完了		
	印刷、製本	井手			完了		
	②3学年分	FS-2-3					○
		AC実習					○
		AV実習					○
		CT実習					○
IE実習						○	
TC実習						○	
C 技術移転	①1学年実習指導技術 *実習機器と実習指導書を使って予備実習を行う *指導書を改善する	FS-1-1	伊落	90%	完了	野村(2次研修員)	
		FS-2-1	池内	90%	完了		
		FS-3 HE	柏木 井手	90%	完了	ワカ(2次研修員) リ-レ、ワカ(3次研修員)	
		FS-3 功	池内	50%	完了	2~3月に設置完了したら、運転、指導再チェック	据付け遅れた場合○。
		FS-6	廣田 宮本	50%	50%	マウス、フットラ(3次研修員) 2~3月に設置完了したら、運転、指導再チェック	据付け遅れた場合○。

C 技術移転	①1学年実習指導技術	FS-7	土屋 敦野	90%	完了	7月1' (2次研修員) 7月1'、9月1' (3次研修員)		
	②1学年教材開発	FS-1-1	伊落	90%	完了			
	* 予備実習を通じ、不足教材、発展教材を制作する	FS-2-1	池内	90%	完了			
		FS-3 HE	柏木 井手	100%	完了			
		FS-3 功	池内				2~3月に設置完了したら試作品製作	据付け遅れた場合○。
		FS-6	廣田 宮本	50%			2~3月に設置完了したら試作品製作	据付け遅れた場合○。
		FS-7	土屋 敦野	90%				
		③1学年レクチュア内容	FS-11	各人	50%			○
		FS-12	各人	50%			○	
	④2学年実習指導技術	FS-1-2					○	
	* 実習機器と実習指導書を使って予備実習を行う * 指導書を改善する	FS-1-2					○	
		FS-2-2					○	
		FS-4					○	
		FS-5					○	
		FS-8					○	
		FS-9					○	
	⑤2学年教材開発	FS-1-2					○	
	* 予備実習を通じ、不足教材、発展教材を制作する	FS-1-2					○	
		FS-2-2					○	
		FS-4					○	
		FS-5					○	
		FS-8					○	
		FS-9					○	
	⑥2学年レクチュア内容	FS-13					○	
		FS-14					○	
	⑦3学年実習指導技術	FS-2-3					○	
	* 実習機器と実習指導書を使って予備実習を行う * 指導書を改善する	FS-10					○	
		AC					○	
		AV					○	
		CT					○	
		IE					○	
		TC					○	
		CAD					○	
⑧3学年教材開発		FS-2-3					○	
* 予備実習を通じ、不足教材、発展教材を制作する	FS-10					○		
	AC					○		
	AV					○		
	CT					○		
	IE					○		
	TC					○		
	CAD					○		



C 技術移転	⑨3学年レクチュア内容	FS-15					○
	⑩数学科コンピュータ活用技術短期受入れ		土屋			数学科教員あと1名配置必要	○派遣することサ側に説明済
	⑪物理の実験機器活用技術短期受入れ		宮本				○派遣望ましい(予算確保済)
	⑫化学の実験機器活用技術短期受入れ		池内				○派遣望ましい(予算確保済)
	⑬教育指導法						○
D 供与機材(伊落)	①PCBシステム活用技術		伊落	100%	完了		
			萩野	100%	完了		
	②PCBシステム補充整備		伊落	80%	完了		
	③供与機材マニュアル整備		伊落	80%	完了		
	④供与機材目録手交		廣田	80%	完了		
E 教科書	①1,2,3年英訳教科書(計19種)		本部	75%	完了		
	②1年アラビック訳補助		大島	99%	完了		
	③2年英訳補充	FS-13	土屋				○
		FS-14	萩野				○
	④2年アラビック訳補助						○
	⑥3年アラビック訳補助						○
F 専門分野継ぎ事項(宮本)	①専門分野説明、かつ、FD	AC	萩野		完了		
		AV	伊落		完了		
		CT	宮本		完了		
		IE	土屋		完了		
		TC	井手		完了		
		HE	柏木 井手		完了		
		電子	柏木		完了		
		電気	廣田		完了		
		機械	池内		完了		
G 贈与機材(萩野)	①パソコン13台(一太郎活用)		萩野 柏木			日本研修修了者8名に技術移転予定	○日本語のみのソフト
	②一室に設置、整備、引き渡し		萩野		完了		
	③その他の機材、リスト作成、引き渡し		萩野		完了		
	④図書		萩野		完了		
H 人づくり協力(塩谷)	①第4次研修員ガイダンス		大島				○
	②第5次以降研修方法検討		塩谷				○
I 学校経営	①実習基本技能マニュアル		萩野	100%	完了		
	②安全マニュアル・電気		井手	90%	完了		
	③安全マニュアル・機械		池内	70%	完了		
	④校則		塩谷 池内	100%	完了		
	⑤入学選抜		井手	100%	完了	準備不足の為本年は導入断念	

I・学校検査点	⑥評価、評定	池内	100%	完了	一部採用。試用-改善	
	⑦担任の職務	池内 相木	100%	完了		
	⑧展示パネル	伊藤 秋野	20%			○
	⑨学校参観日	大島				○
	⑩技術セミナー	大島				○
	⑪プロジェクト運営(委) ・サ側機関への働きかけ	大島			サ側のイニシャティブが先行している	
J・その他	①業務書類まとめ	石垣		完了		
	②現地購入物品整理	石垣		完了		
	③ミッション受け入れ	塩谷		完了		
	④四半期報告書、チーム最終報告	廣田		完了		
	⑤専門家寄贈図書	宮本		完了		

[略号の説明]

\*FS = Fundamental Subject (工業基礎科目)

(1年次 FS)

- \*FS-1-1 = Computer science
- \*FS-2-1 = Electronic drawing 1
- \*FS-3 = Working 1
- \*FS-6 = Electric lab. and practice
- \*FS-7 = Electronic lab. and practice
- \*FS-11 = Fundamental of electricity
- \*FS-12 = Electronic devices

(2年次 FS)

- \*FS-1-2 = Computer science
- \*FS-2-2 = Electronic drawing 2
- \*FS-4 = Working 2A
- \*FS-5 = Working 2B
- \*FS-8 = Analog lab. and practice
- \*FS-9 = Digital lab. and practice
- \*FS-13 = Analog electronics
- \*FS-14 = Digital electronics

(3年次 FS)

- \*FS-2-3 = Electronic drawing (CAD=Computer Aided Design)
- \*FS-10 = Practice
- \*FS-15 = Electronic technology

(3年次専門科目)

- \*AC = Automatic control (自動制御)
- \*AV = Audio visual electronics (オーディオビデオ)
- \*CT = Computer technology (コンピュータ技術)
- \*IE = Industrial electronics (工業電子)
- \*TC = Telecommunication (電気通信)

表3 生徒数と履修科目単位数

1. クラス数とクラス定員 (日本の工業高校の場合、クラス定員は40名)

\*クラス分けは3年次で明確にし、1年次・2年次は全員が共通の科目を学習する。

	AC科	AV科	CT科	IE科	TC科	合計	
1年	30人×8クラス					240人	AC=Automatic Control (自動制御)
2年	30人×7クラス					210人	AV=Audio-Video (オーディオ・ビデオ)
3年	30人	30人	30×2	30人	30人	180人	CT=Computer Technology (コンピュータ・テクノロジー)
						630人	IE=Industrial Electronics (工業電子)
							TC=Telecommunication (電子通信)

2. 単位数: 一般科目(Common Subject)

	1年	2年	3年	計
数 学	4	4	4	12
物 理	2	2	-	4
化 学	1	1	-	2
アラビア語	1	1	-	2
英 語	4	3	3	10
体 育	1	1	1	3
宗 教	1	1	-	2
計	14	13	8	35

\*参考例 (日本のある工業高校)

	1年	2年	3年	計
数 学	4	2	2	8
理 科	2	2	2	6
社 会	4	2	2	8
国 語	4	2	2	8
英 語	3	2	2	7
保健体育	3	3	3	9
芸術家庭	芸2	家2	家2	6
特別活動	1	1	1	3
計	23	16	16	55

3. 単位数: 工業科目(Industrial Subject)

	1年	2年	3年	計
講義 F S	10	11	6	27
講義専門	-	-	8	8
製 図	2	2	2	6
実習 F S	14	14	3	31
実習専門	-	-	8	8
P S	-	-	5	5
計	26	27	32	85
総 計	40	40	40	120

\*参考例 (日本のある工業高校)

	1年	2年	3年	計
工業数理	2	2	-	4
電気基礎	5	4	-	9
電子技術	1	3	8	12
情報技術	-	3	4	7
製 図	-	2	-	2
工業基礎	3	-	-	3
実 習	-	4	6	10
計	11	18	18	47
総 計	34	34	34	102

\* P S = Project Study (課題研究)

\* F S = Fundamental Subject (工業基礎科目)

表 4 実績一覧表

活動項目	1988年 (昭和63年)	1989年 (平成元年)	1990年 (平成2年)	1991年 (平成3年)	1992年 (平成4年)	1993年 (平成5年)	
長期専門家	4/1 — 3/31 藤嶋秀一 (自動制御)						
	4/1 — 3/31 上谷良一 (PVT : 技術)						
	清水雄彦 (工業電子) 8/25						
	大島正弘 (4-7月: 4*) 4/1					3/31	
	田中邦秀 (自動制御) 4/8					3/31	
	石道滋若 (調整員) 11/29					3/31	
	伊藤謙 (PVT : 技術) 5/16					3/31	
	込屋和一 (電気通信) 5/16					3/31	
							桂木孝平 (電子基礎) 12/26
							能智功 (自動制御) 12/26
短期専門家	伊藤謙 10/23-11/22 (機材リスト)	12/21-1/5 河野恭司 (工業電子)					
	廣田嘉男 11/15-11/25 (機材リスト)	12/21-1/5 田中武 (電気通信)					
	井上正也 12/20-1/10 (工業電子)	野口隆晴 (化学) 12/21-1/5					
	鈴木清 12/20-1/10 (電気通信)	西野敬憲 (物理) 12/21-1/5 坂中俊一 8/26					
	能智功 (自動制御) 8/1-8/19	株田勇起 (数学) 10/31-11/15					
	宮本修 (工業基礎) 8/1-8/19	佐々木久尚 (化学) 12/21-1/8					
	後井俊一 (PVT : 技術) 11/26-12/14	岡野敬憲 (物理) 12/14-1/5					
							伊藤謙 9/11-9/23 小野孝一
							(LAN) 7/7-7/17 藤嶋秀一
							(LAN) 7/27-8/26 (PVT : 技術)
						(LAN) 8/15-9/23 吉倉正一 吉田生彦	
						長谷和 (4-7月: 4*) 4/8	
						坂谷和 (4-7月: 4*) 4/7	
当年度 (千円)		481,700		22,930			
繰越		* 主に1年次用実務機材		* 1年次用実務機材			
携行機材 (千円)	8,672	5,010	8,397	1,852	13,454	4,032	

日本側／相手国側実績一覧表

活動項目	1988年 (昭和63年)	1989年 (平成元年)	1990年 (平成2年)	1991年 (平成3年)	1992年 (平成4年)	1993年 (平成5年)
C/P日本研修	4 1. Abdullah Al-Abulkaria (Computer Technology =CT) 2. Saeed Al-Ghasadi (Audio Video =AV) 3. Fahed Al-Abowenda (Telecommunication =TC) 4. Ghazi Al-Asalmi (Automatic Control =AC) 5. Mohammed Al-Khaibry (Industrial Electronics =IE)	7 *再研修 (合計で2年)	7 *再研修 (合計で2年)	7 *再研修 (合計で2年)	7 *再研修 (合計で2年)	7 *再研修 (合計で2年)
現地業務費	1,430	500	574	3,600	2,412	
実施計画諸費						
相手国側 投入実績						
C/P配置						
施設設備						
機材調達						
その他						
調査団	5/22-6/2 運営指導:2名 計画打合:6名	12/10-11/21 計画打合:6名	7/3-7/10 運営指導:6名	10/31-11/10 運営指導:6名	10/7-10/10 運営指導:1名 12/12-12/17 運営指導 専門家:2名	

C/P 配置一覧表

\* — : 配属実績、 — : 本邦研修

分野	C/P名	予算年 (月)	昭和63年 4 7 10 1	平成元年 4 7 10 1	平成2年 4 7 10 1	平成3年 4 7 10 1	平成4年 4 7 10 1	平成5年 4 7 10 1	本邦研修 (主な研修先)	備考 (技術移転/技術修得状況等に関するコメント等)
運営	Hussein Al-Dahlawi		(兼任)				学院長に任命			
	Ali Al-Atni		(兼任)				副学院長に任命			
コンピュータ技術	Abdullah Al-Abulkarim						—	短大進学	CICC	
	Salaiman Al-Selhain								"	
	Fahad Al-Mohemmid								"	
	Abdulrahman Al-Shehary									
	Khaled Al-Motawwa									
AV	Saeed Al-Ghandi					ソニー工技教員			SONY	
	Fahad Al-Jonna								"	
	Mansour Al-Mosabehy								"	
電気通信	Fateh Al-Abowenda							短大進学	富士通	
	Walid Al-Bakkaly								"	
	Saleh Al-Saigh								"	
	Yaser Al-Homood									
	Ghazi Al-Asaimi					ソニー工技教員	大学進学(7/19)		富士通	
自動制御	Saleh Al-Eissa					早期帰国	短大進学		"	
	Abdullah Al-Khenaifer								"	
	Sami Al-Khalaf									
工業電子	Mohammed Al-Khaibry					ソニー短大教員			横河電気	
	Ala Al-Battinji					早期帰国	ソニー工高教員		"	
	Ahmed Al-Zubrani								"	

活動実績一覧表

活動項目	平算年 (月)	1988年(昭和63年) 4 7 10 1	1989年(平成元年) 4 7 10 1	1990年(平成2年) 4 7 10 1	1991年(平成3年) 4 7 10 1	1992年(平成4年) 4 7 10 1	1993年(平成5年) 4 7 10 1
A: 教育計画							
1. 教育課程							
2. 詳細カリキュラム							
3. 理数科別カリキュラム							
4. 実習指導ガイドブック							
5. 実習指導書							1年分完成 — 2年分
6. 工業科教科書							2年分完成 — 3年分
7. 理数科教科書対照表							
B: 教育機器							
1. 教育機器仕様書							1-2年分見直し — 3年分見直し
3. 供与機器			決定 発注 — 到着				LAW器付 — PCB器付
4. DVD-ROMの企画							
5. 実習消耗品リスト							
6. 実習教材開発							
C: CPへの技術移転							
1. 予備実習							
2. マイクロチップの研修							
3. 派遣前研修		1次			3次		4次
4. 技術交換							2名・3名・4名・5名 — 6名・7名・8名
D: 教育経営							
1. 入学選抜助言							
2. 生徒評価助言							

## 第4章 ミニッツ

### 4-1 ミニッツの概要

(1) プロジェクトの目標は、電子技術分野（自動制御、工業電子、電気通信、コンピュータ技術、オーディオビデオの5分野）において中堅技術者を3年間にわたり教育する技術学院を設立することにあることが確認された。

### (2) プロジェクトの経過

1973年の日本・サウディ・アラビア双方のコンタクトおよびサウディ・アラビアからの要請、それを受けての事前調査・実施協議等の各種調査を実施し、1988年より日本人専門家が本格的に派遣され、技術移転を行ってきた結果およびサウディ・アラビア側による学院施設の建設により1993年9月、開校となった。

### (3) プロジェクト活動

#### ① 日本側投入⇨p12参照

- ・各種調査の実施
- ・長短専門家による技術移転

具体的には：カリキュラム開発、テキスト・ブック開発、実習指導書開発等

- ・機材：機材の供与、機材リストの作成
- ・研修員受入による技術移転の実施

#### ② サウディ・アラビア側投入⇨p13、14参照

- ・学院建設の準備と開校
- ・カウンターパートの配置および教員の採用
- ・テキスト・ブック等のアラビア語への翻訳作業の実施
- ・機材購入

#### ③ 活動実績については別添資料（p31、32）とした。

### (4) 成果

#### ① プロジェクトの結果

- ・電子技術分野の教育機関として最新の設備および機器を備えた同学院が1993年9月25日に開校となった。



- ・開校にあわせて教材開発、テキストブック作成、実習指導書作成およびカウンターパートへの技術移転等が行われた。
- ・技術移転を受けた教材開発、テキストブック、実習指導書についてはサウディ・アラビア内の他の電子技術学院等へも活用し技術普及を図ることがサウディ・アラビア側より表明された。
- ・日本・サウディ・アラビア双方の努力によりプロジェクトの目標はほぼ達成されたものと判断される。

#### (5) 現プロジェクトの継続必要性

- ・これまでの技術移転によりサウディ・アラビア側が独自に学院運営、教育計画、実習指導、教材開発等を実施していくことが期待されているが、2年次・3年次の教員への技術移転および3年次の実習指導書作成・教材開発が未実施の状況にあることから、3年次が卒業するまでの1996年6月までフォローアップとして協力が必要と判断される。

#### (6) 短大昇格への技術協力要望

- ・短大昇格への必要性、構想、協力内容等について協議した。
- ・サウディ・アラビア側は本年7月に日本側から可能性の検討結果につき回答を期待した。
- ・協力内容：専門家派遣（派遣にあたっては、大学教育等に携わっている専門家を要望。内容はカリキュラム開発、教科書作成への指導。また、コンピュータセンターおよび機材維持管理部門への専門家派遣も要望）

研修員受入（最新の電子技術を習得するための本邦大学等への視察研修）

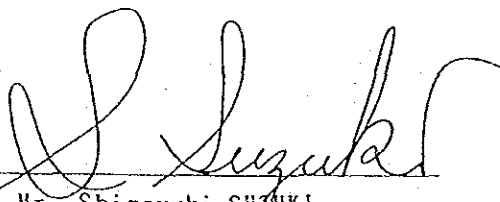
機材（機材のアップグレードを図るための仕様書作成にあたっての技術協力等）

MINUTES OF JOINT EVALUATION  
BETWEEN  
JAPANESE TECHNICAL EVALUATION TEAM AND THE AUTHORITIES  
CONCERNED OF THE GENERAL ORGANIZATION FOR TECHNICAL EDUCATION  
AND VOCATIONAL TRAINING ON TECHNICAL COOPERATION  
FOR THE PROJECT OF TECHNICAL ELECTRONICS INSTITUTE IN RIYADH

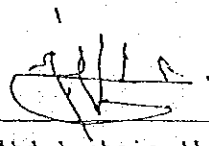
Japanese Technical Evaluation Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Shigeyuki SUZUKI, visited the Kingdom of Saudi Arabia from 21st to 28th of January 1994, and had a series of discussions with the authorities concerned of the General Organization for Technical Education and Vocational Training (hereinafter referred to as "GOTEVOT") on implementation of Japanese technical cooperation for the Technical Electronics Institute in Riyadh (hereinafter referred to as "the Institute").

As a result of evaluation, the Team and GOTEVOT agreed to report and recommend to their respective Governments the following matters.

January 26, 1994



Mr. Shigeyuki SUZUKI  
LEADER, JAPANESE TECHNICAL  
EVALUATION TEAM, JICA



H. E. Mr. Abdulmohsin AL-THUWAINI  
ACTING GOVERNOR, GOTEVOT

LIST OF ATTENDANCE

(JAPANESE SIDE)

- The Japanese Evaluation Team
  - Mr. Suzuki Shigeyuki  
Senior Assistant for Technical Cooperation, Technical Cooperation Division,  
Economic Cooperation Bureau, Ministry of Foreign Affairs
  - Mr. Iwamoto Muneharu  
Senior Curriculum Specialist, Vocational Education Division,  
Elementary and Secondary Education Bureau,  
Ministry of Education, Science and Culture
  - Mr. Bito Hiroyuki  
Technical Education Division, Unit chief of College  
Higher Education Bureau, Ministry of Education, Science and Culture
  - Mr. Aoki Teruhisa  
Teacher, the Technical High School attached to  
Tokyo Institute of Technology
  - Mr. Suzuki Kiyoshi  
The Chief of Teaching Staff for Computer Technology,  
the Tokyo Metropolitan Institute for Technical Education
  - Mr. Kuramoto Bunkichi  
Director, Second Technical Cooperation Division,  
Social Development Cooperation Department, JICA
  - Mr. Ishikawa Yoshitsugu  
Interpreter, Japan International Cooperation Center
- Embassy of Japan in Saudi Arabia
  - Mr. Oki Masamitsu Minister
  - Mr. Kurokawa Junichiro Second Secretary
- JICA Saudi Arabia Office
  - Mr. Sato Tadashi Resident Representative
  - Mr. Wada Yasuhiko Assistant Resident Representative
- Japanese Experts
  - Mr. Oshima Masahiro Chief Advisor
  - Mr. Shiotani Kano Senior Advisor
  - Mr. Hirota Yoshio Expert on Fundamentals of Electricity
  - Mr. Ikeuchi Atsushi Expert on Fundamentals of Mechanics
  - Mr. Iochi Takashi Expert on Audio-Video
  - Mr. Kashiwagi Kohei Expert on Fundamentals of Electronics
  - Mr. Tsuchiya Takashi Expert on Industrial Electronics
  - Mr. Miyamoto Osamu Expert on Computer Technology
  - Mr. Ide Mitsuo Expert on Telecommunication
  - Mr. Ogino Noboru Expert on Automatic Control
  - Mr. Ishigaki Shigeki Coordinator

(SAUDI SIDE)

- General Organization for Technical Education and Vocational Training(GOTEVOT)
  - Mr. Abdulmohsin Al-Thuwaini Acting Governor
  - Dr. Ali Al-Ghafis Director General of Technical Education
  - Mr. Ali Al-Bakri Director General of Administration and Finance
- Riyadh Technical Electronics Institute
  - Mr. Hussein Al-Dahlawi Director
  - Mr. Ali Al-Atni Deputy Director
- College of Technology in Riyadh
  - Dr. Saeed Milah Dean of the College
  - Dr. Fahd Al-Tuwaijry Director of Electronics Department
  - Dr. Turki Al-Turki Professor of Electronics Engineering

MEMBERS OF JOINT EVALUATION TEAM

(JAPANESE SIDE)

Mr. Suzuki Shigeyuki  
Mr. Iwamoto Muneharu  
Mr. Bito Hiroyuki  
Mr. Aoki Teruhisa  
Mr. Suzuki Kiyoshi  
Mr. Kuramoto Bunkichi  
Mr. Ishikawa Yoshitsugu

(SAUDI SIDE)

Dr. Ali Al-Ghafis  
Dr. Saeed Mallah  
Dr. Turki Al-Turki  
Mr. Ali Al-Bakri  
Mr. Hussein Al-Dahlawi



SCHEDULE OF THE JAPANESE EVALUATION TEAM

DATE	DESCRIPTION	HOTELS	REMARKS
Jan. 21(FRI)	Arrival at Riyadh	Al-Khozama Hotel Check-in	
22(SAT)	AM. Visit Embassy of Japan and JICA Office  PM. Visit the Institute	Al-Khozama	
23(SUN)	AM. Discussion with GOTEVOT Officials  PM. Japanese side meeting	Al-Khozama	Mr. M. IWANOTO arrived at RUH and Check-in
24(MON)	AM. Discussion with GOTEVOT Officials	Al-Khozama	
25(TUE)	AM. Discussion with GOTEVOT Officials  Signing the Minutes of Discussions	Al-Khozama	
26(WED)	AM. Visit College of Tech. in Riyadh  PM. Report to Embassy of Japan & JICA Office	Al-Khozama	
27(THU)	Japanese side meeting	Al-Khozama	Mr. B. KURAMOTO Check-out
28(FRI)	Leave K. S. A.	Al-Khozama Check-out	

*SS*

*[Signature]*

## 1. Objective of the project and its activities

### 1-1 Objective of the project.

The objective of the project is to set up a technical institute in Kingdom of Saudi Arabia, which admits intermediate school graduates and train them to become middle level technician in electronics technology for three years, and to achieve a broad-based technical education of electronics.

The assistance is to be given in five areas; Automatic Control, Industrial Electronics, Telecommunications, Computer Technology, and Audio Video Electronics .

### 1-2 Chronological review of the project

#### 1. 1973

Japanese Government invited Director General for Technical Education, Ministry of Education of Kingdom of Saudi Arabia to Tokyo. At that time, Japanese Government expressed her readiness to provide the technical assistance to the Kingdom.

#### 2. 1973

Request of the Government of the Kingdom of Saudi Arabia for Japanese cooperation in establishing the Institute ( Radio, Television, Telecommunication, and Electronics Measurement ) was submitted.

#### 3. 1974 January

Dispatched a mission for preliminary study

#### 4. 1974 June

Dispatched a mission for execution study ( R/D was signed for opening the Institute in 1977 ).

#### 5. 1975 October.

Dispatched a mission for execution study ( R/D was amended for the assistance would be until opening the Institute).

#### 6. 1985 January

Request was made including assistance of following six electronics subject matters; Automatic Control, Industrial Electronics, Medical

Instruments, Computer Technology, Telecommunications, and Audio Video Electronics.

7. 1985 August

Building construction for the Institute was started ( Design: Azusa architect, Japan, Contractor: Ret Ser, Taiwan,)

8. 1986 December

Dispatched a planning mission ( Assistance to be limited to five following subjects; Audio Video Electronics, Industrial Electronics, Telecommunications, Computer Technology, and Automatic Control.)

9. 1987 December

Dispatched a planning mission ( A discussion was made for curriculum development and planning of technical education building )

10. 1988 April

Dispatched two long term experts ( Since then continuous dispatch of experts every year ).

11. 1989 October

Dispatched a planning mission ( Opening the Institute was agreed to amend to September 1991 ).

12. 1990 June

Dispatched an advisory mission ( Discussion was made to change the time of opening the Institute, Japanese side expected in 1993 and Saudi side insisted in 1992 )

13. 1991 August

Building construction was completed ( Electric power supply was completed in November 1992)

14. 1993 September

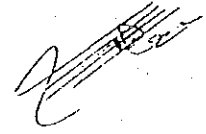
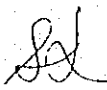
Opening of the Institute

2. Project achievement

2-1 Inputs by the Japanese side.

a. Dispatch of survey missions.

This project was started on the 12th June 1974 after the agreements between the Government of Saudi Arabia and Japan. The Japanese



mission was headed by Mr. Takeichi Nomura from the Ministry of Education. Since then several missions were sent as required. The present one is the final evaluation mission.

b. Dispatch of Japanese experts.

There are two types of experts; one is long term expert who has one year or more period of assignment and the other is short term expert who has less than one year period of assignment. Two long term experts were first dispatched in April 1988. Since then the several experts were dispatched in five specialties and basic subjects in electronics according to the development of the project. Short term experts were dispatched such areas as construction of the school, curriculum development, equipment list, teaching manual for practice, school management, and equipment installation etc.

c. Educational planning.

Assistance of the educational planning can be classified into the following areas; curriculum development, text book development and development of teaching manual for practice.

\* Curriculum development

The curriculum development was originally made in four specialized courses; such as Radio, Television, Telecommunication, and Electronic Measurement according to the minutes agreed in 1974. However, at the time of the 1987 Japanese mission and Saudi authority agreed to cover the following five courses; Automatic Control, Industrial Electronics, Telecommunications, Computer Technology, and Audio Video Electronics to keep up with new developments in the electronics field. The curricula were submitted in 1988 to the Saudi authority in Tokyo.

\* Text books

The text books of each subject of the course in English were developed in Japan for each grade. They were submitted to the Saudi authority in 1991, in 1992 for the second grade, the third grade text books will be submitted in 1994.

\* Teaching manuals for practice.

The teaching guidelines for practice were developed by Japanese advisory committee and submitted to the Saudi authority in 1992. The teaching manuals for practice were developed by the Japanese experts in accordance with the guidelines. Further developments of



teaching manuals for practice will be completed for the second grade at the end of March 1994.

d. Equipment.

The classification of activities for equipment of this project are divided in two parts; making an equipment list for the Institute, and making an equipment list contributed by the Japanese mission in 1989. The equipment of the latter were handed over in 1990 to the Saudi Government..

e. Training of practical teachers.

The training of practical teachers (counterparts) were agreed by the mission in 1987 and implemented in 1988.

## 2-2 Inputs to the project by the Saudi side

a.

On 17/8/1395H, corresponding to 24/8/1975G, the ministerial decision No: 1021 was issued for approaching the cooperation with the Japanese Government in the fields of establishing the Technical Electronics Institute Project in Riyadh.

b.

The Japanese AZUSA company, proposed by the Japanese Government, performed the Engineering studies and designs of the project. These studies were submitted in November 1979.

c.

In August 1988, a Saudi Committee was dispatched to Japan for discussing and finalizing the curricula.

d.

On 29/3/1989, The Saudi Side discussed with the Japanese mission, at that time, the possibility of delivering the requested apparatuses and equipment necessary for the Institute through JICA. The Japanese side apologized to perform such action because it is not allowed by the Japanese Regulations. Therefor they promised to submit a list of the specialized firms in this concern, as the procedure followed on recommending the firm performed the engineering studies.

The Japanese Embassy in Riyadh informed the GOTEVOT of nine companies proposed by the Japanese Government.

e.

On 8/6/1412H, corresponding to 14/12/1991G, the nine companies proposed by the Japanese Government were invited to tender in this project.

The submitted envelopes from the bidders were opened on 9/10/1412H, corresponding to 11/4/1992G. The tender was canceled on 1/11/1412H, corresponding to 2/5/1992G, because of the highly exaggeration of the prices submitted by the Japanese companies.

f. Dispatch of counterparts to Japan for their training

The Saudi side has started to dispatch counterparts to Japan for their training since 1988 based on the R/D signed in 1974.

g. Executive committee for opening the Institute

The Saudi side has established the executive committee for opening the Institute and planned the target of opening the Institute in September, 1993.

h. Opening of the Institute

The Saudi side has started to construct building of the Institute in 1985 and completed it in 1991.

The opening of the Institute was already planned to be achieved in September 1992, but due to uncontrolled reasons, the opening of the Institute was delayed until September 1993. The most important reason for this delay was the exaggeration of the prices submitted by the Japanese companies as well as the delay of the electric supply.

i. Purchase of the equipment for workshops (1st and 2nd grade)

The Saudi side has held the bidding of the equipment for the 1st and 2nd grades in 1992.

The Letter of Credit has been issued in July, 1993 and these equipment were installed in January, 1994.

j. Arabic translation of the textbooks

The English textbooks provided by the Japanese side are proceeded their translation into Arabic and binding of them since April, 1993.

k. Purchase of the equipment for workshops (3rd grade)

The Saudi side has started to promote the bidding work of the equipment for the 3rd grade in 1993.

l. Assignment of the teachers

The Saudi side has started to recruit the teachers of the Institute since April, 1993 in order to open the Institute .

m. Assignment of the staffs of the Institute

The Saudi side has assigned the administrative staffs for operation of the Institute in April, 1993.

n. Assignment of the maintenance staffs for facilities of the Institute

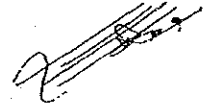
The maintenance staffs for the smooth operation of the Institute assigned after April, 1993.

o. Assistance to the Japanese Experts

Based on the R/D agreed in 1974, a housing allowance and a car have been provided to each Expert working in the Institute.

2-3 Result of inputs

Result of inputs from the both sides is shown in the tables attached in page 7 and 8.



## 2-4 Achievement of project activity

The materials attached in ANNEXES indicate the result of the project activities.

1. Annex 1 Organization and prospectus of RTEI
2. Annex 2 Buildings and rooms allocation of RTEI
3. Annex 3 Personnel planning
4. Annex 4 Annual teaching timetables
5. Annex 5 Equipment list of Japanese contribution
6. Annex 6 Curriculum vs. textbook comparison table

## 3. Conclusion

### 3-1 Result of the project

Riyadh Technical Electronics Institute was successfully opened on 25th September 1993. The Institute is unique in its educational programme and with equipment and facilities involving highly developed Japanese electronics technology. No other technical institutes in neighbouring countries are as advanced with its teaching contents and method as the Institute. This institute is given to itself the responsibility of preparing work force of middle level of technician in the fields of five electronics courses. It can be evaluated as the most prosperous educational institute for preparing electronics technician in the Kingdom by the society.

This project of Riyadh Technical Electronics Institute has born the great fruit and this Institute has salient features of technical education system in electronics technology as a result of Japanese technical cooperation.

Accordingly the Saudi Government evaluates and is proud of this result and plan to disperse this remarkable system such as the curriculum, textbook, and teaching manual for practice to other technical institute in the Kingdom.

As a result of the Joint Evaluation activities and the follow-up discussions, both side reached the following conclusions.

(1) In general, most activities specified in the R/D are successfully performed.

(2) The successful implementation of the project is due largely to the

effective and sincere cooperation between the Japanese authorities and experts, and the Saudi authorities and counterpart personnel, who have overcome most of the difficulties in the course of implementing the project.

### 3-2 Necessity of continuation of the present project

It is expected that the trained counterpart teachers would initiate the development of the Institute with institute management, educational planning, practical instruction, and teaching material development after completion of the project.

Both sides are conscious of necessity of further technical transfer, so called "follow up cooperation" of JICA scheme, on preparing the teaching manuals for the third grade and teaching skill regarding the laboratory and workshop for the second and the third grade.

Therefore assistance and technical cooperation by Japanese Government is inevitable until June 1996.

### 4. Requirement of technical cooperation for up-grading

The board of directors headed by the Ministry of Labor and Social Affairs with the five member selected from the concerned Government Department the Governor of GOTEVOT, chairman of Manpower Ministerial Committee, and two representatives from the private sector has decided the resolution concerning manpower development plan in the Kingdom of Saudi Arabia.

The resolution is based on the necessity to achieve the objective the Development Policy in Saudi Arabia and coping with the importance of educating the Saudi youth as qualified middle level technician in the field of highly growing electronics technology.

Therefore the emphasis of upgrading the Institute into electronics technology department of College of Technology in Riyadh is laid greatly.

Based on the background mentioned above and the answer of GOTEVOT to the questionnaire made by the Japanese Government concerning the upgrading of the Institute, both sides discussed the up-grading of the level of the Technical Electronics Institute to that of the College of Technology.

During the discussion between Saudi authority concerned and

Japanese evaluation mission, the Saudi side requested the Japanese side that the future cooperation would include the contents mentioned below. Saudi side is expecting to get the positive response from the Japanese Government by July 1994.

a) The experts:

-The Japanese side will dispatch experts, one expert for each specialized area. Experts should have experience in teaching at the university level in order to provide a technical advice at the college level, concerning curriculum development and development of teaching manual for practice.

- To dispatch a short term expert for each of the educational media section, computer center and maintenance section after completion of equipment installation and appointment of the Saudi staff.

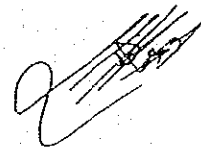
The curriculum vi-tae of the proposed experts would be submitted to GOTEVOT for reviewing them before dispatching the experts.

b) Training of Saudi personnel

Japanese side will provide training to Saudi counterparts including the chance of visiting the college facilities and observatory field trips to the factory or research center to facilitate their study of new technology. The programme of the training has to be submitted to GOTEVOT before dispatching the trainees.

c) Equipment

The Japanese side will assist the Saudi side in preparing the technical specifications of the equipment required for upgrading the Institute. To provide the technical books, references, and publications.



2-3 Results of Input ① (Japanese side) Actual results:

Contents	1974		1975		1976		1977		1978		1979		1980		1981		1982		1983	
	Fiscal Year	Month	Fiscal Year	Month	Fiscal Year	Month	Fiscal Year	Month	Fiscal Year	Month	Fiscal Year	Month	Fiscal Year	Month	Fiscal Year	Month	Fiscal Year	Month	Fiscal Year	Month
Dispatch of Mission																				
Dispatch of Expert																				
Curriculum of Industrial Subject																				
Curriculum of Mathematics, Physics and Chemistry (Experimental Guideline) (Supplement of Textbook)																				
Practical Manual																				
Technical textbook																				
Educational Equipment List: (Equipment for Workshop and Laboratory, Desk etc.)																				
Contribution of Equipment																				
List of Consumable Item																				
Development of Teaching Material for Practice																				
C/P Training in Japan																				

del

del

2-3 Results of Input ② (Saudi side) Actual results:

Contents	Fiscal Year		1974		75	76	77	78	79	80	81	82	83	84	85	86	87	1988				1989				1990				1991				1992				1993			
	Months		1	6	10	2	10												1	2	3	4	7	10	1	3	4	7	10	1	3	4	7	10	1	3					
Assignment of C/P	12 9 4 7 10 1 3 4 7 10 1 3 4 7 10 1 3 4 7 10 1 3 4 7 10 1 3 4 7 10 1 3 4 7 10 1 3 4 7 10 1 3																																								
Executive Committee	Part-time status																																								
Building and Facility	Start of Construction																																								
Purchase of Equipment	Tender for 1st and 2nd grade L/C Install.																																								
Textbook Translation to Arabic	Tender																																								
Purchase of Equipment Second Phase																																									
Teacher																																									
Employee																																									
Maintenance Staff																																									
House Allowance and Car																																									

Ad

5/5



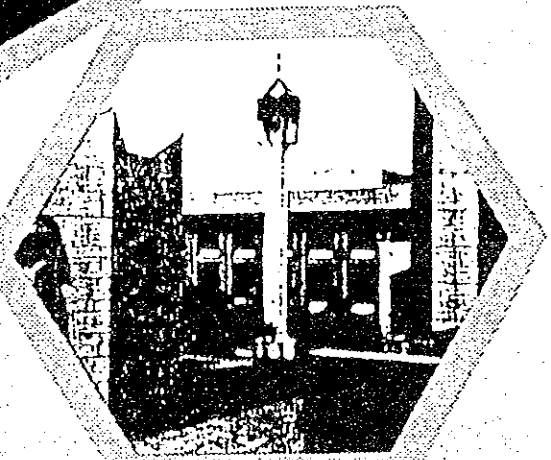
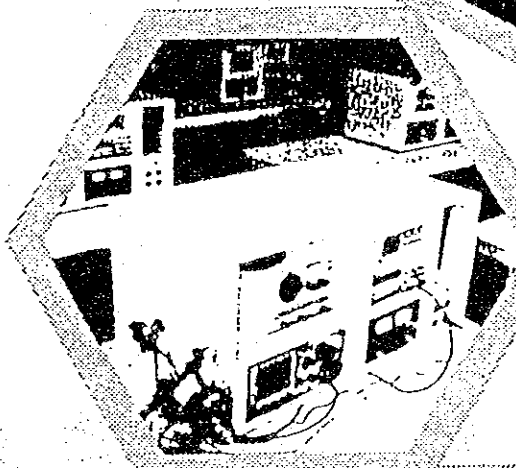
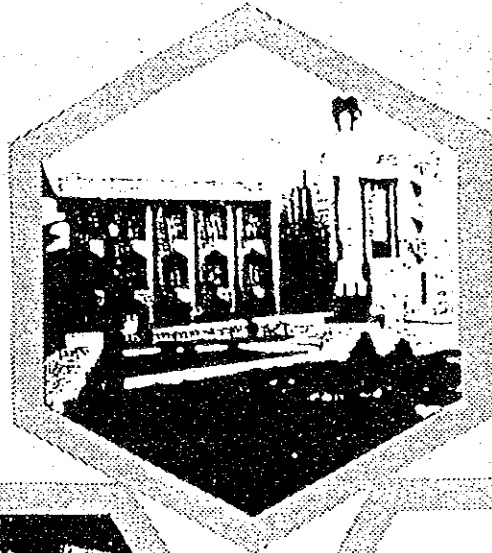
# 資 料



# Kingdom of Saudi Arabia

General Organization for Technical  
Education and Vocational Training

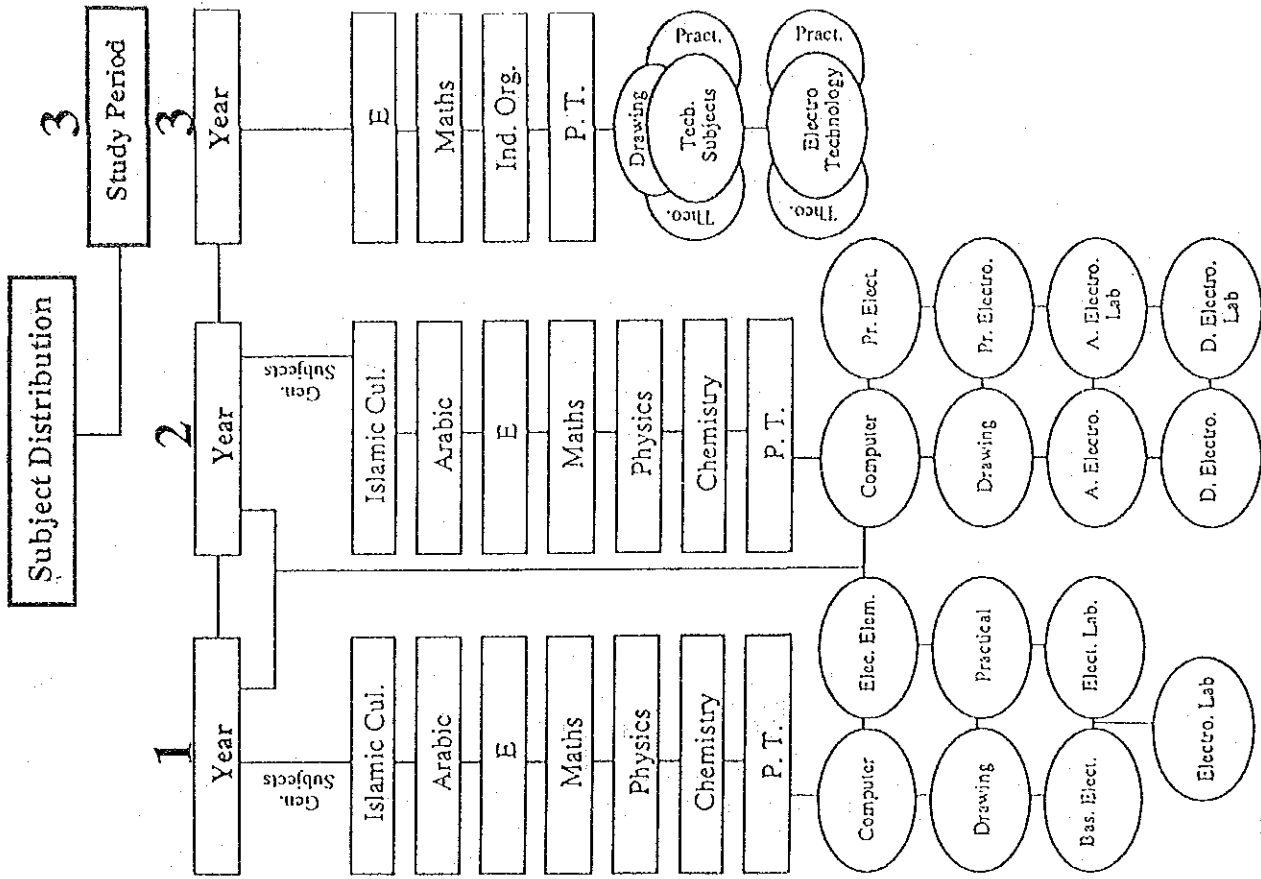
Public Relations Department



Technical Electronics Institute in Riyadh

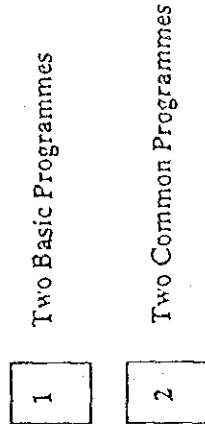
# Technical Electronics Institute

Location	North of Riyadh (see plan)
Total Area	100,000 sq. M
Building Area	62,500 sq. M
Capacity	630 Students
Housing Capacity	280 Students
Teacher Housing	Eight-Flat Buildings (5)
Workshops & Labs.	80
Facilities	Mosque (600 persons) Theatre (600 persons) Playgrounds, Parks, Gardens
Total Cost	SR 350 million

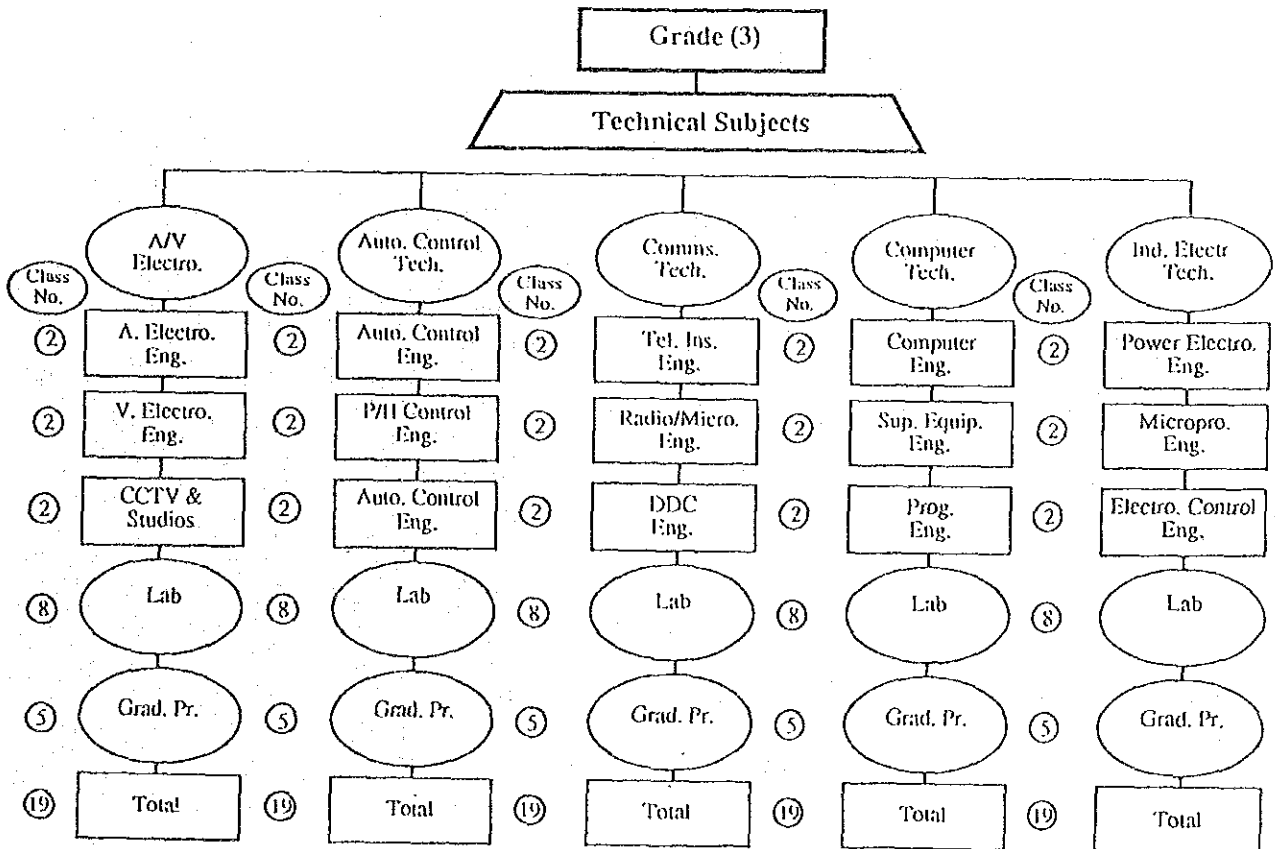
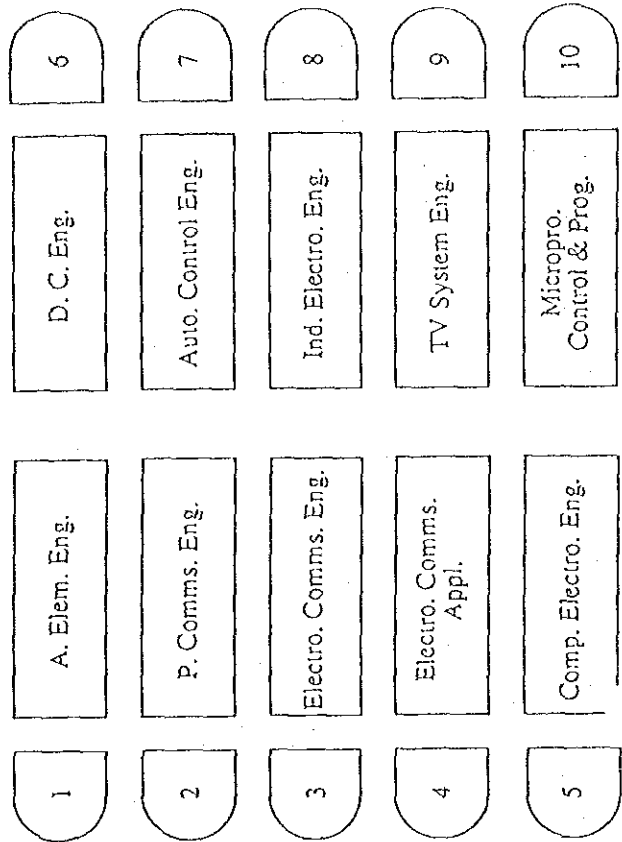


# Electronics Technology

In addition to the five subjects given at the Technical Electronics Institute there are another ten programmes as follows.



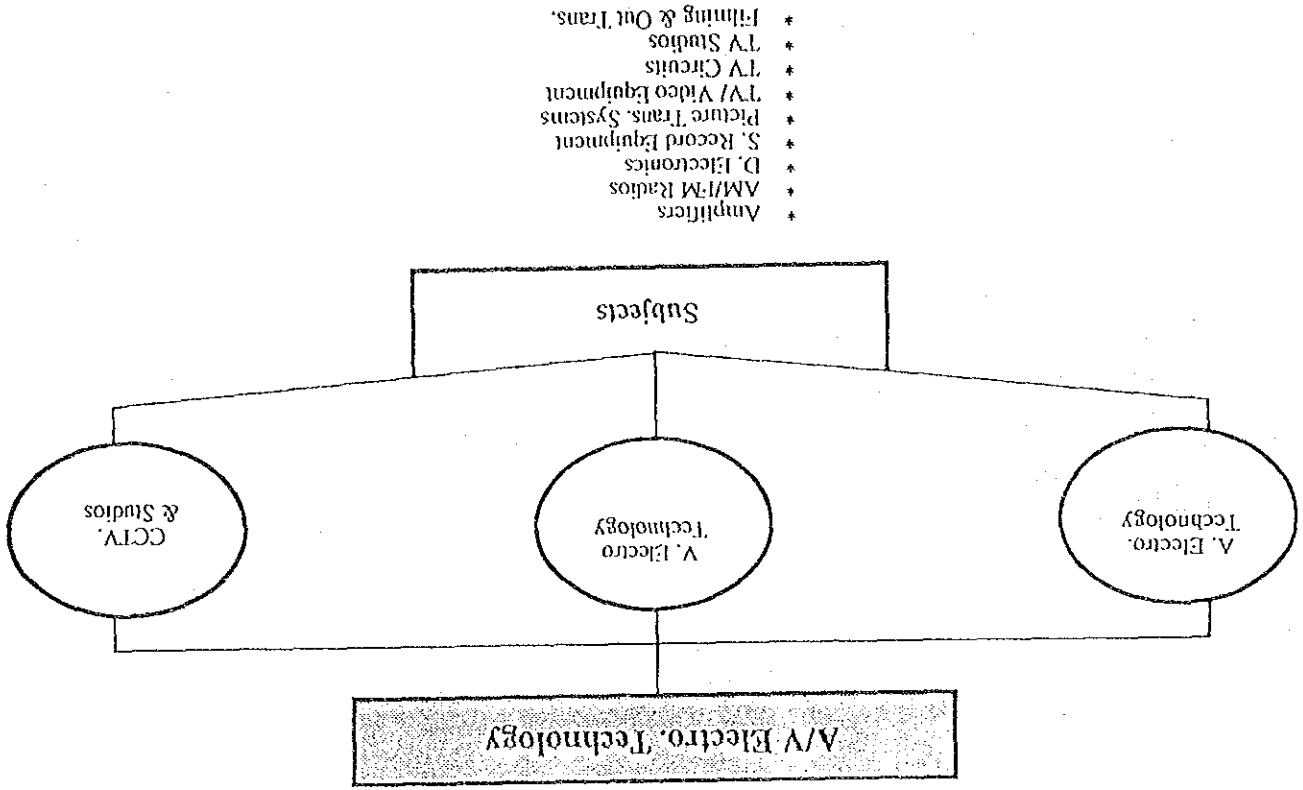
## The Programmes



# Graduation Project

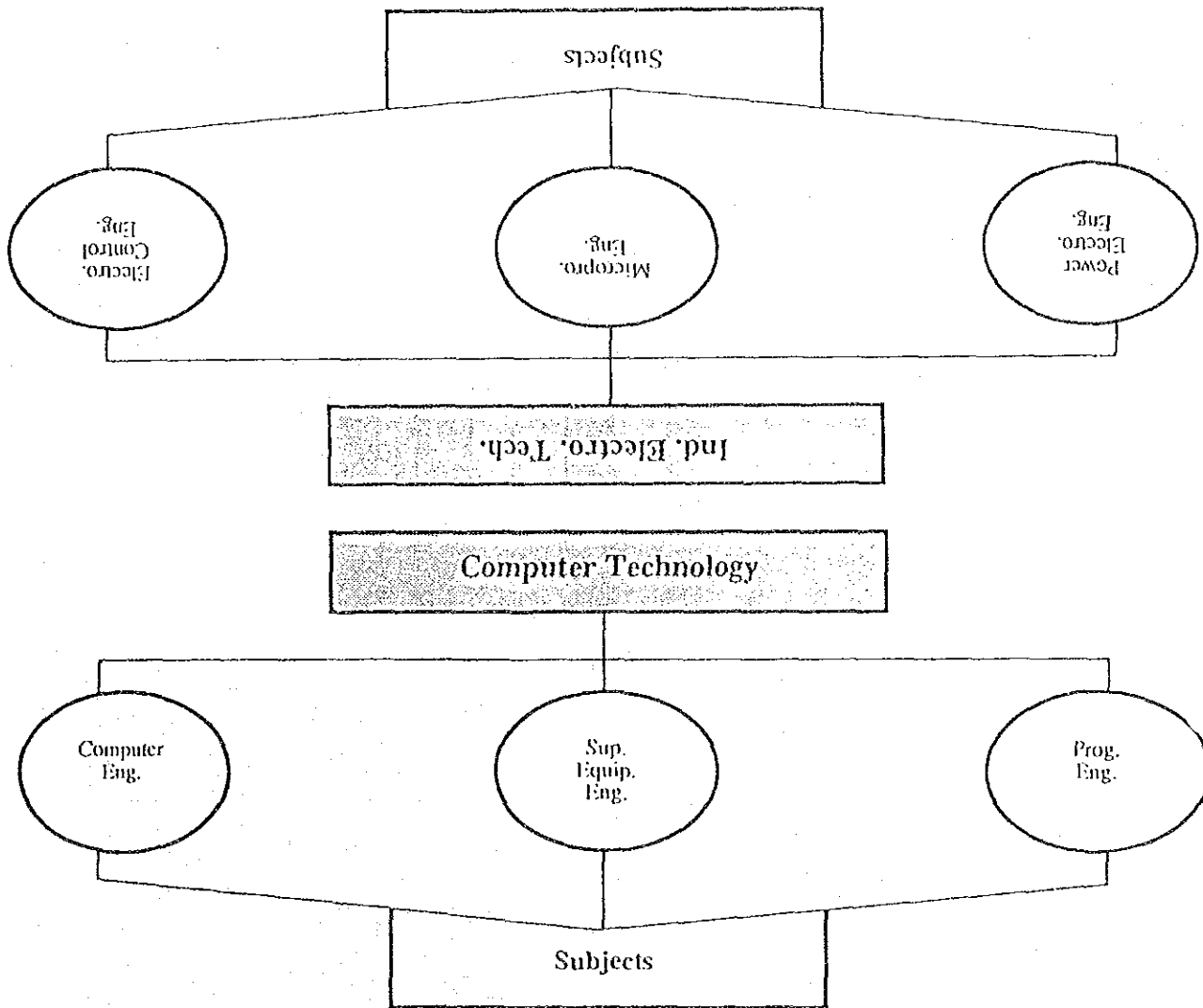
Students make the graduation project in groups as follows:

- Students explain the project or part of it in detail using drawing and practical work.



- \* Amplifiers
- \* AM/FM Radios
- \* D. Electronics
- \* S. Record Equipment
- \* Picture Trans. Systems
- \* TV/ Video Equipment
- \* TV Circuits
- \* TV Studios
- \* Filming & Out Trans.

- \* Motors
- \* Trans. & Methods of Control
- \* Basic Micropro.
- \* Electro. Control Equip.



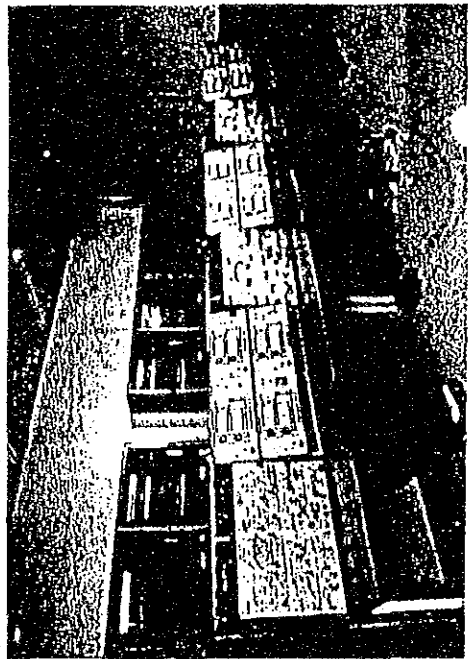
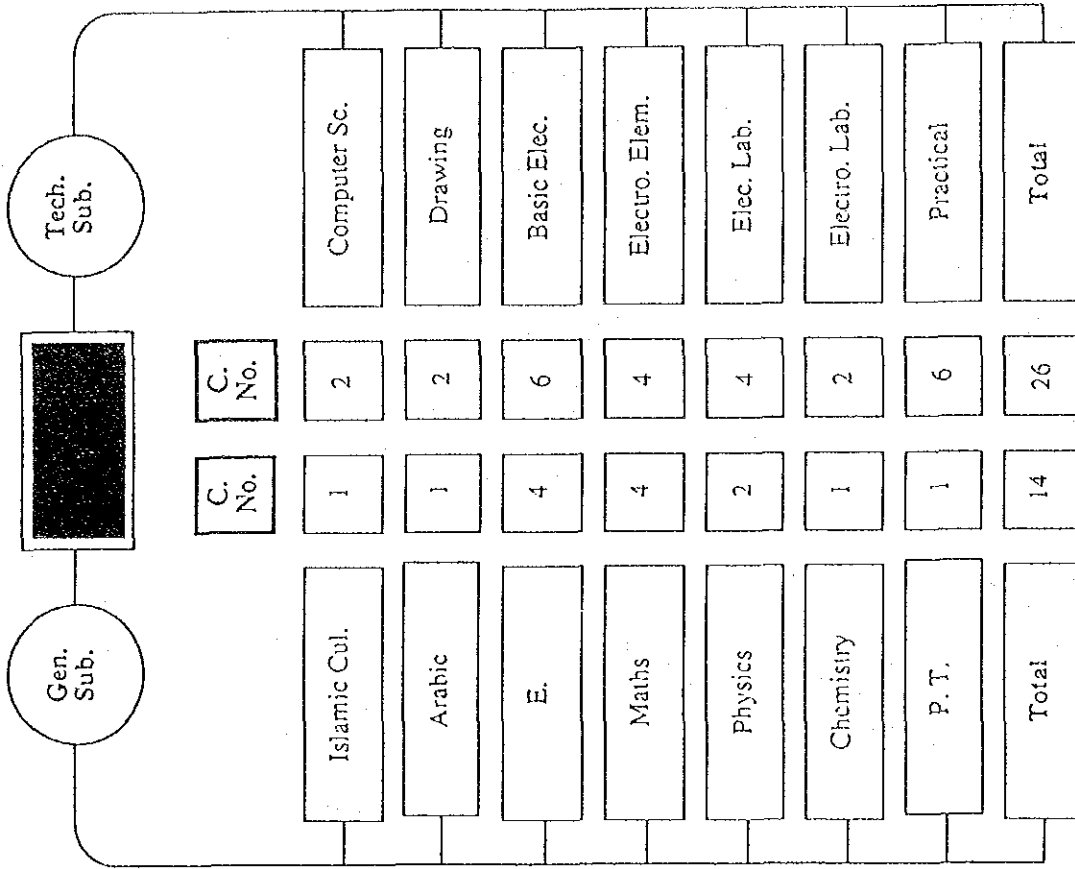
- \* Computer Eng.
- \* Computer Prog.
- \* Sup. Equip.



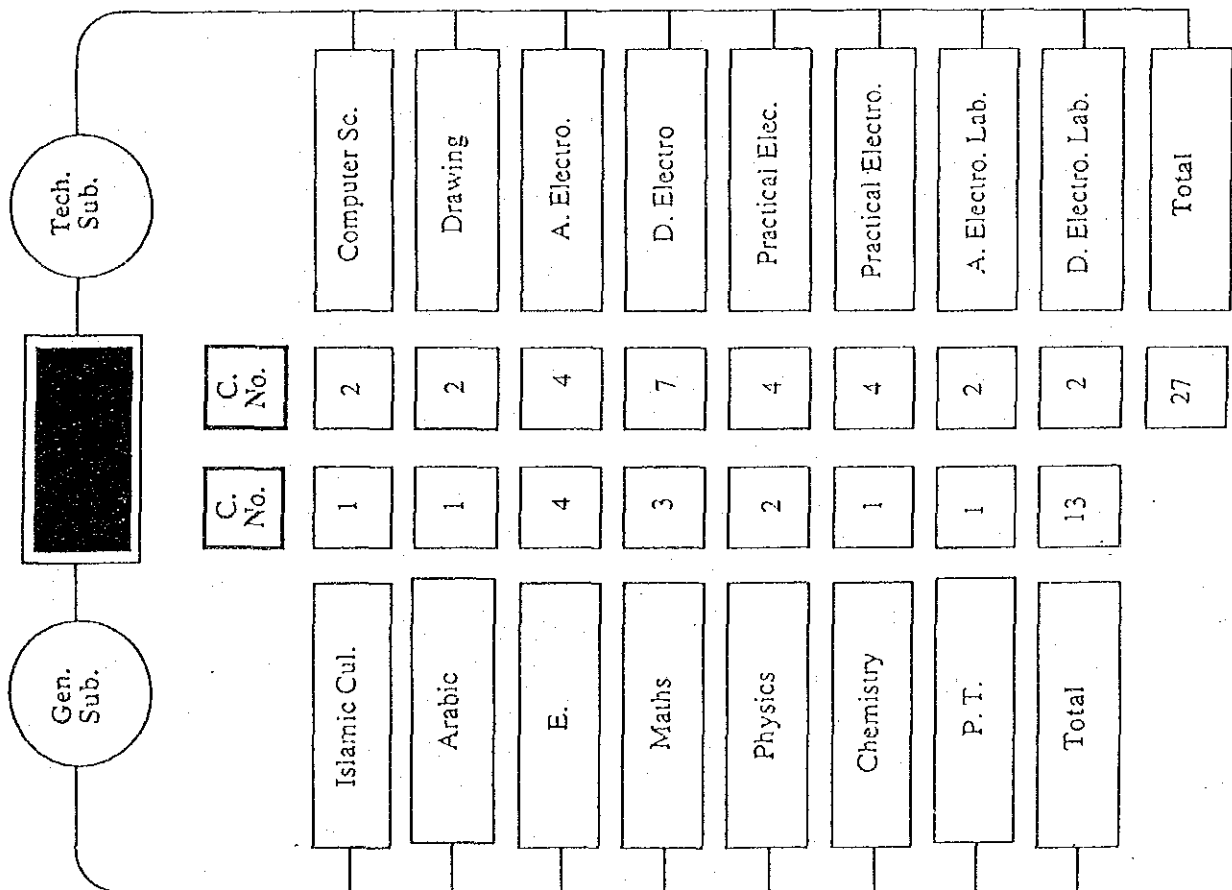
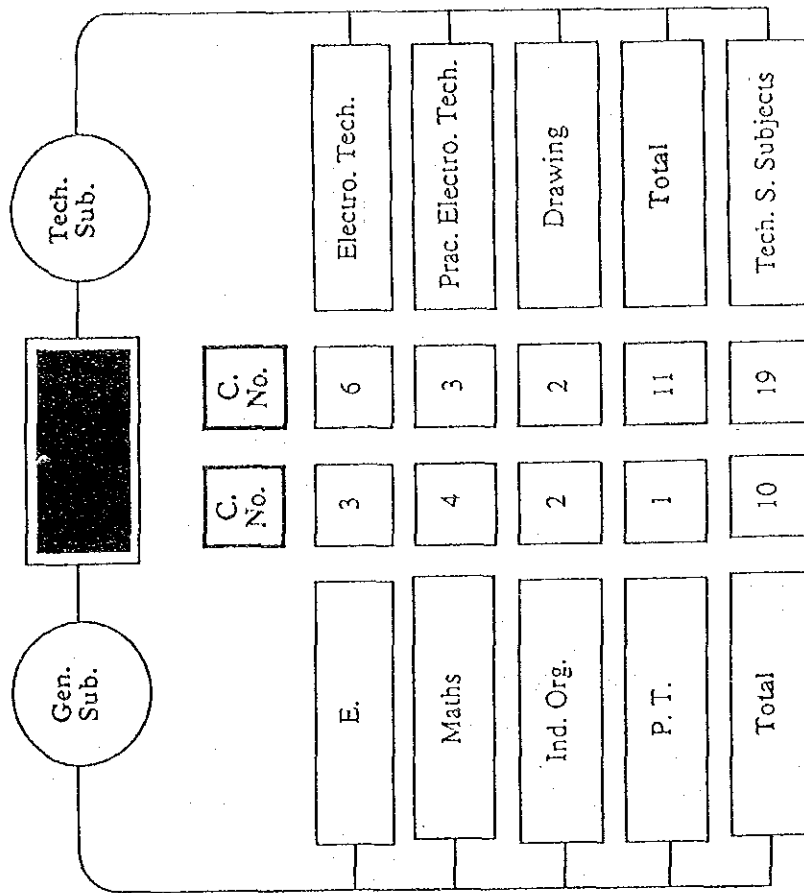
# Technical Electronics Inst.

Subjects by Years

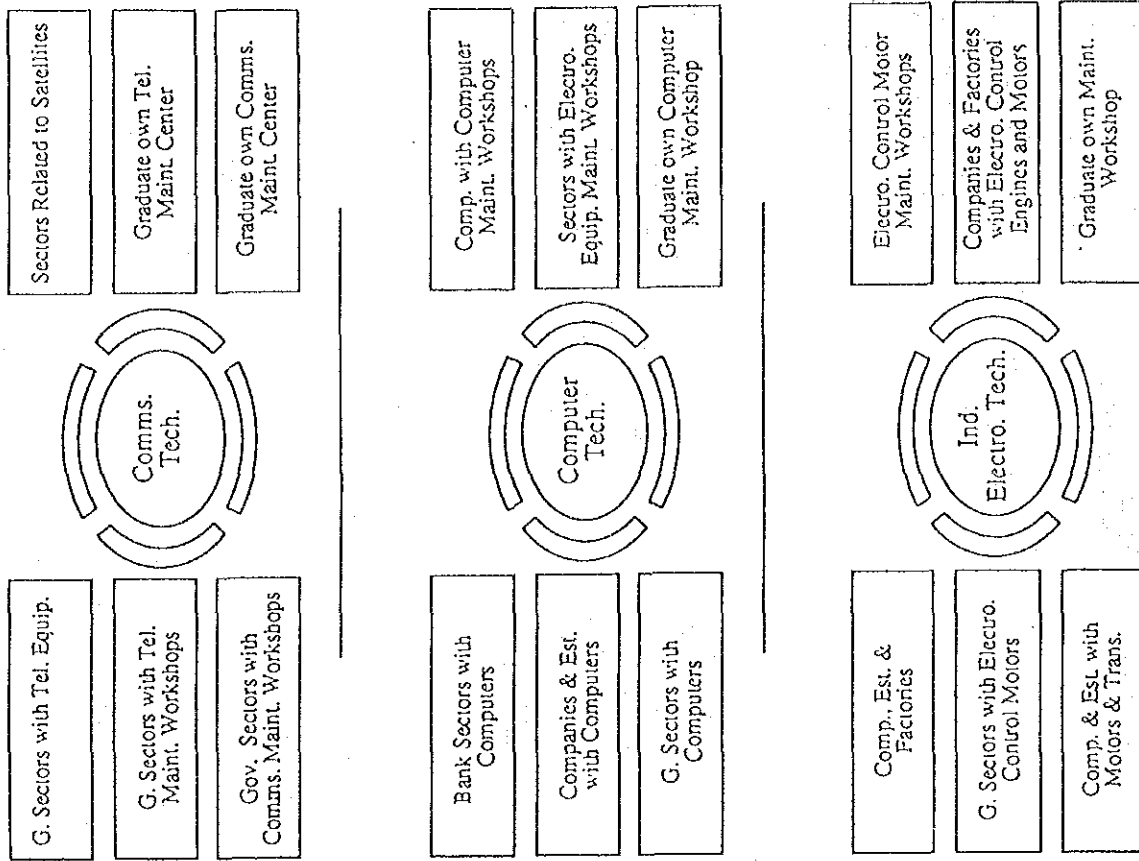
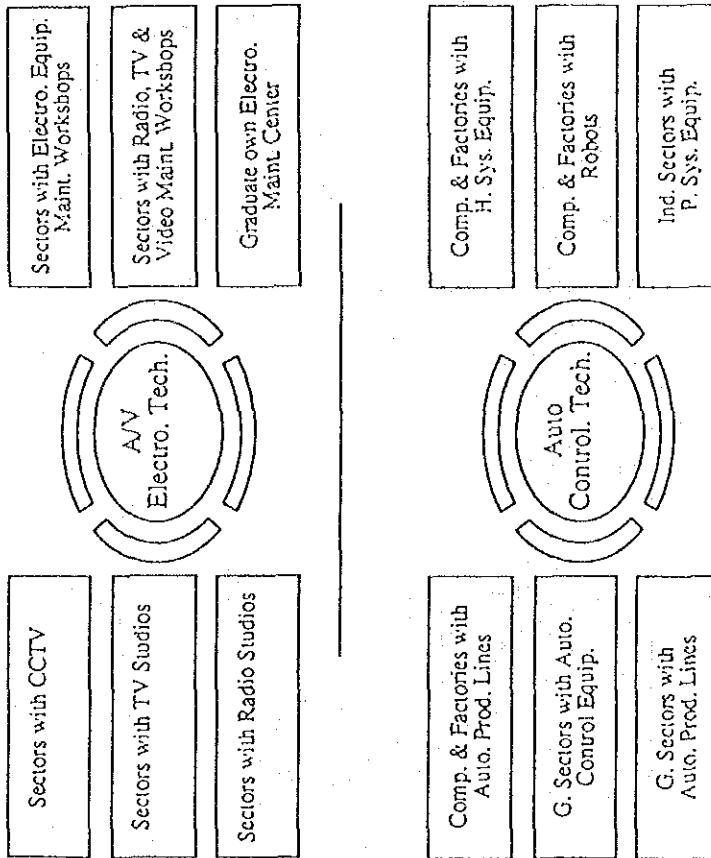
Year	1	2	3	Total
Gen. Subjects	14	13	10	37
Tech. Subjects	26	27	11	64
Tech. S. Subjects	—	—	19	19
Total	40	40	40	120







# Jobs Available for TEI Graduates

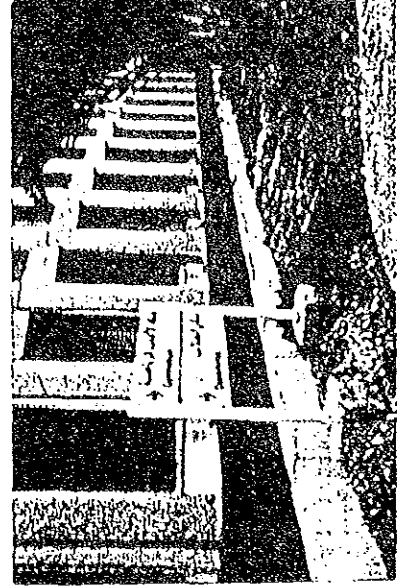
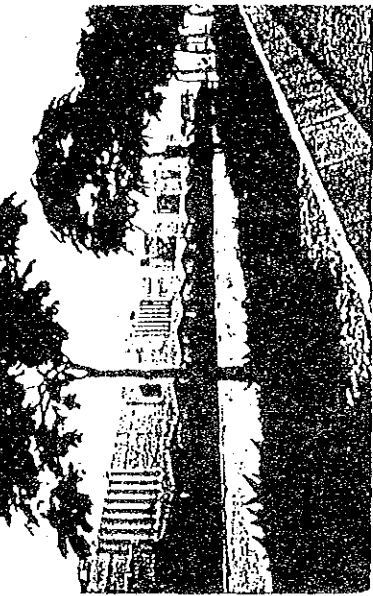


Technical Electronics Institute -  
Adm. Conditions

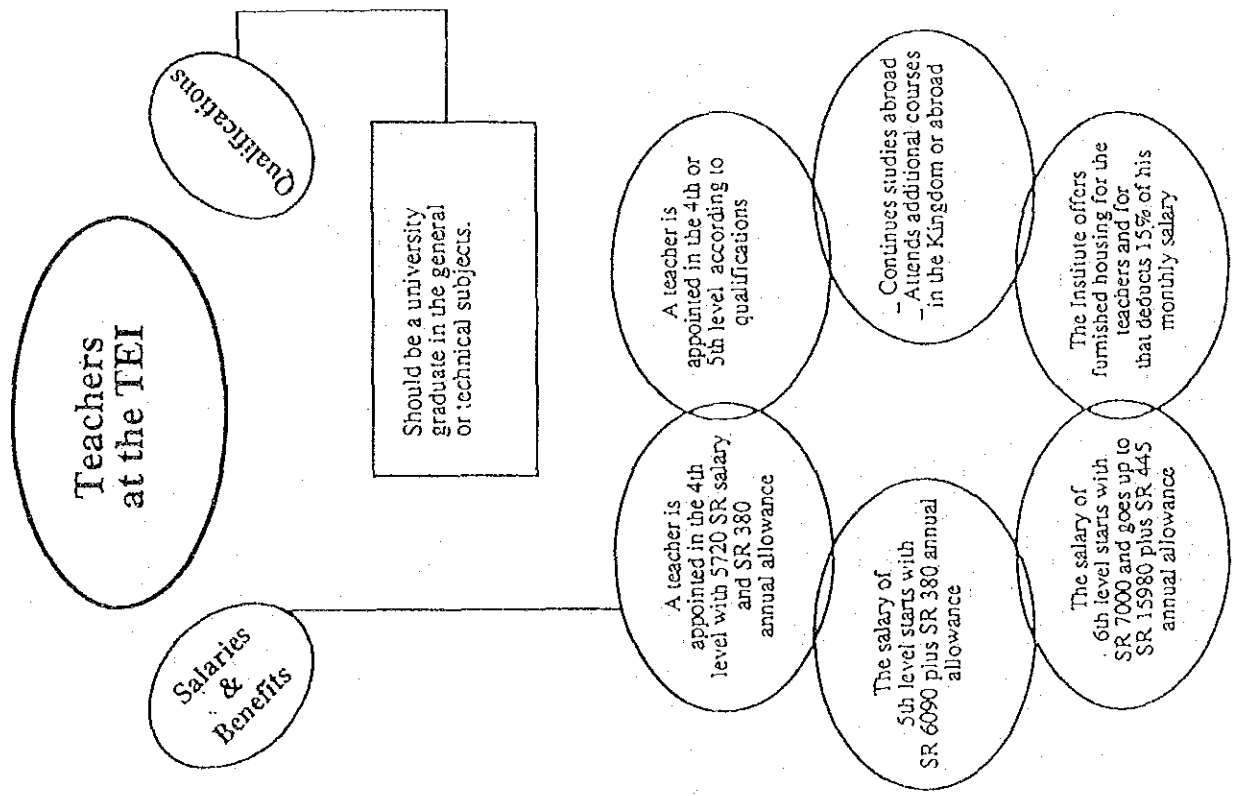
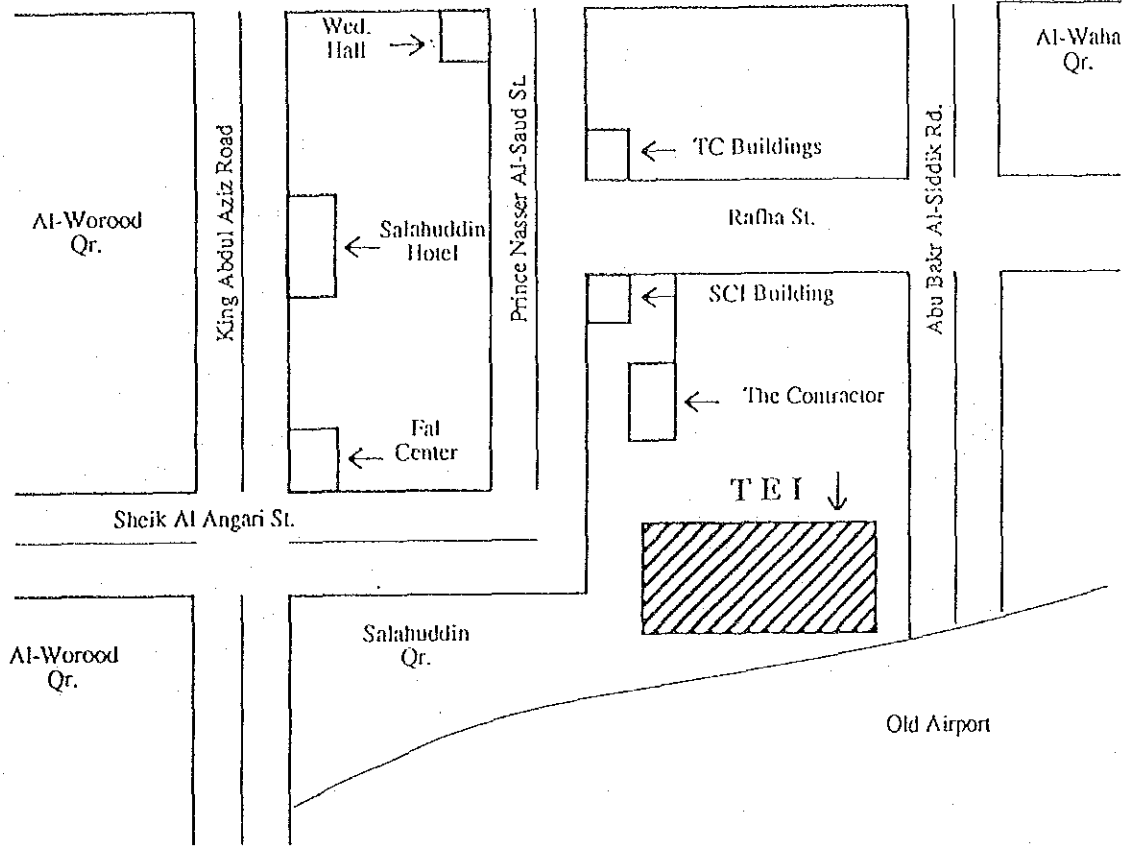
- 1 - Saudi Nationality
- 2 - Third Intermediate Certificate
- 3 - Good Behaviour
- 4 - Pass Medical Test
- 5 - Age not more than twenty years
- 6 - Pass Interview and Adm. Test

Benefits

Monthly Stipend	SR 675
F. Housing	Available for students coming from other towns.
Grad. Certificate	Tech. Electronics Inst. Diploma.
Grade	A graduate is appointed in the 5th grade or second level.
Others	Students at Colleges of Technology have medical care and jobs on pages 16 & 17.



# Technical Electronics Institute Plan

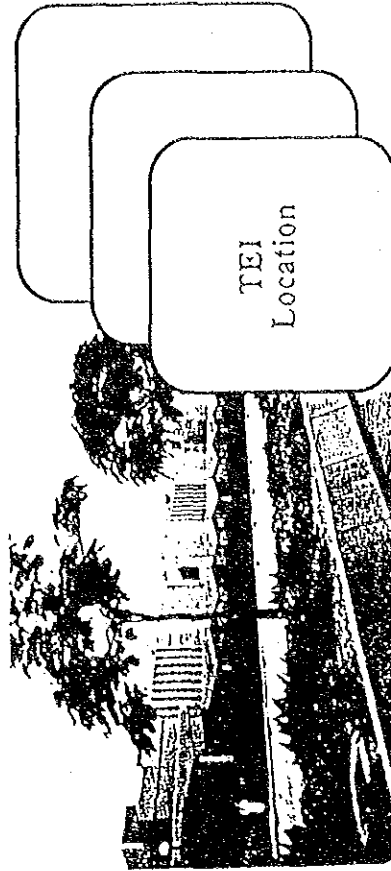


# TEI Tel. Numbers

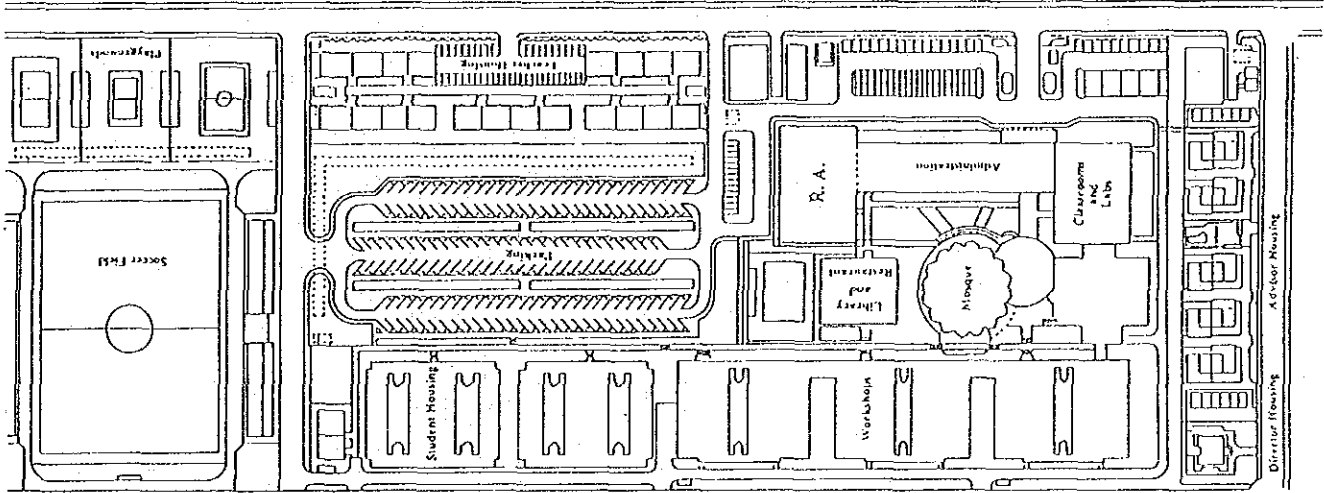
Director 454-6180

Exchange 454-6181/454-9664

Fax 456-1197



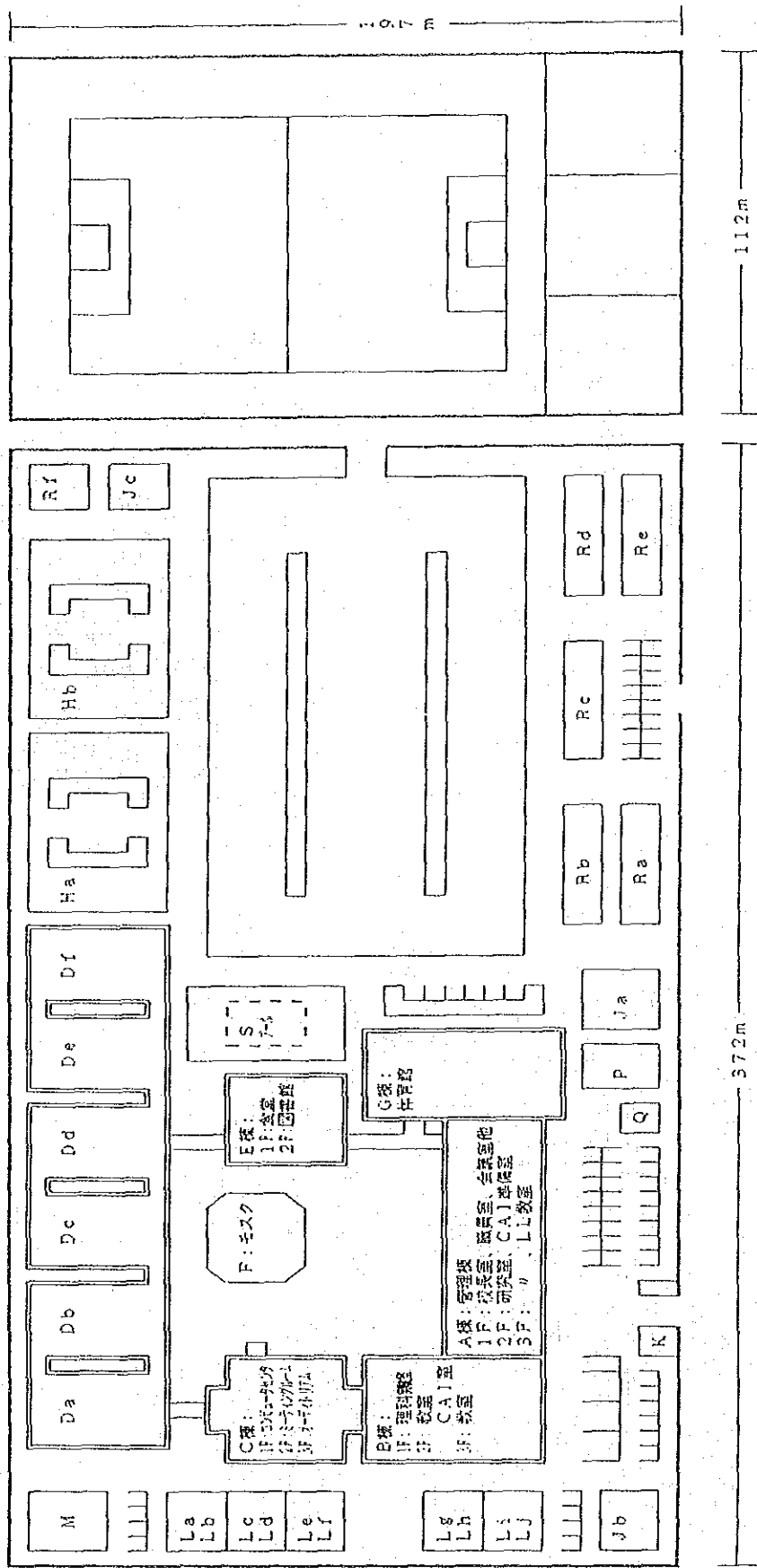
TEI lies north of Riyadh - Salahuddin Quarter,  
 - North of Old Airport St.,  
 - South of Rafha St.,  
 - East of Prince Nasser Ibn Abdul Aziz St.,  
 - West of Abu Bakr Al Siddik St.



2 リアド電子技術学院建物配置図

リアド電子技術学院 建物配置図

- A: 管理棟
- B: ホール、理研実験室
- C: 講義、コンピュータセンター
- D: スタジオ、印刷室
- E: 食堂、図書棟
- F: ミニスク
- G: 学生センター
- H: 三袋保管
- J: 発着、実験所
- K: 守衛室
- L: 教員住宅
- M: 校長官舎
- P: 浄水場
- Q: ガスボンベ室
- R: 教員住宅(集合住宅)
- S: スイミングプール



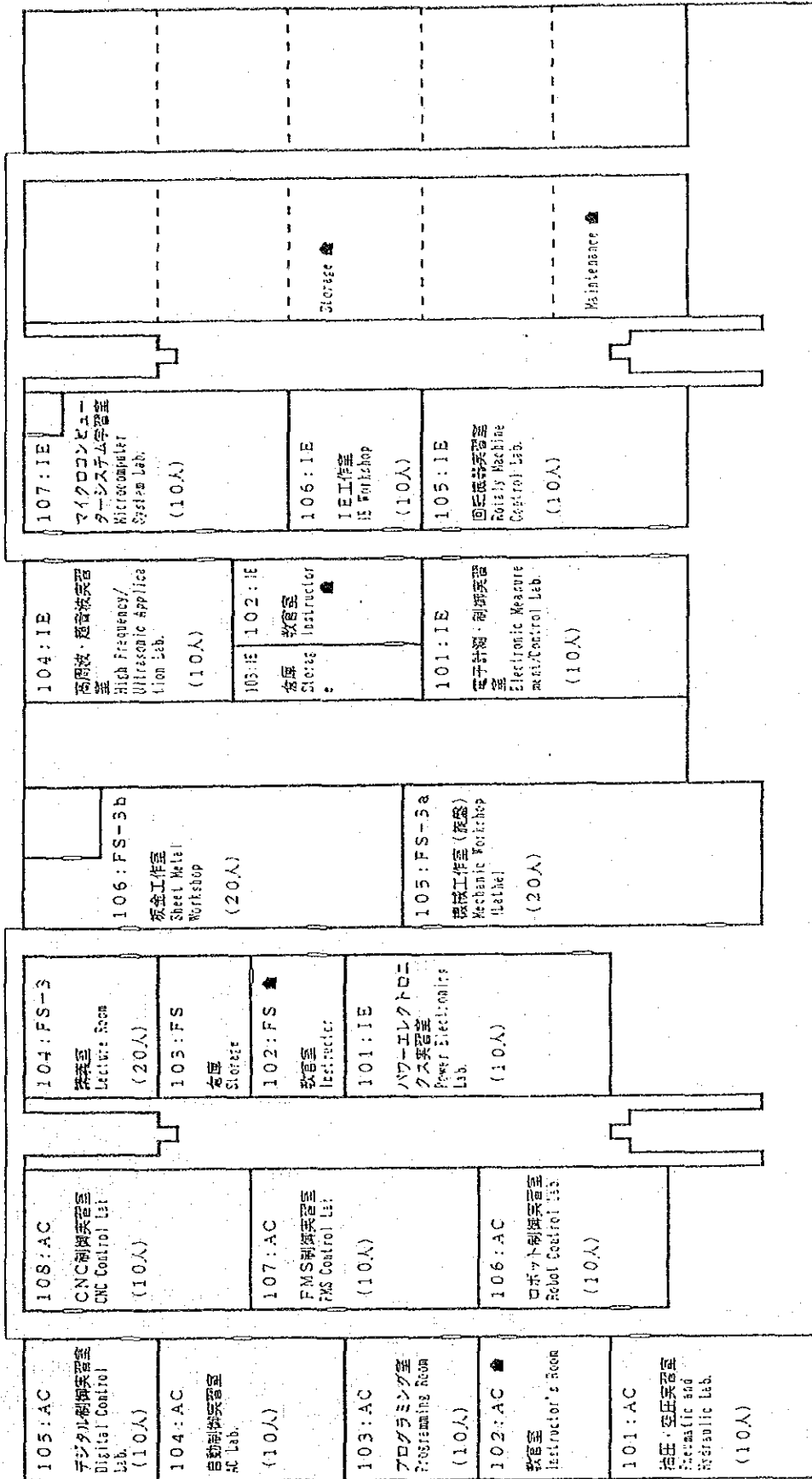
1991.09.18

Dd1

Dc1

Db1

Da1



(1991.09.11)

\* De : Storage ● = 1  
 \* Df : Storage ● = 2

\* 電子実習機1Fターミナル(●)数=8台

- \* IE = 工業電子科 Industrial Electronics Dept.
- \* AC = 自動制御科 Automatic Control Dept.
- \* TC = 電子通信科 Telecommunication Dept.
- \* CT = コンピュータ技術科 Computer Technology Dept.
- \* AV = オーディオ・ビデオ科 Audio-Video Dept.
- \* FS = 基礎科 Fundamental Subject

Da 2

Db 2

Dc 2

Dd 2

206: FS-7b 電子実習室2 Electronic Lab. 2 (15人)	210: FS-3b 電気工作室2 Electric Workshop 2 (15人)	204:	209: FS-4c 電気機器実習室C Electric Workshop C (15人)	204: FS-5 PCB処理室	207: FS-3a 製図室2 Drawing Room 2 (50人)	204: FS-2a CAD実習室B CAD Room B (15人)	207: FS-1a コンピュータサイエンス実習室 Computer Science Lab. (50人)
205: FS-7a 電子実習室1 Electronic Lab. 1 (15人)	209: FS-3a 電気工作室1 Electric Workshop 1 (15人)	203:	207: FS 教室 Instructor 206: FS 右庫 Storage	203: FS-5 電子工作室2 Electronic Workshop 2 (15人)	206: FS-2 製図準備室 Preparation Room of Drawing	203: FS 倉庫 Storage 202: FS 教室 Lectures	206: FS-1 パーソナルコンピュータ実習室2 Personal Computer Room 2 (15人)
204: FS 倉庫 Storage 203: FS 倉庫 Storage	202: FS-9 デジタル回路実習室 Digital Circuit Lab. (15人)	202: FS-4b 電気機器実習室B Electric Workshop B (15人)	202: FS-5 プリント基板工作室 PCB Workshop (15人)	205: FS-2 製図室1 Drawing Room 1 (50人)	201: FS-2a CAD実習室A CAD Room A (15人)	201: FS-2b CAD実習室A CAD Room A (15人)	205: FS-1 パーソナルコンピュータ実習室1 Personal Computer Room 1 (15人)
202: FS-6b 電気実習室2 Electric Lab. 2 (15人)	207: AV デジタル・オーディオ実習室 Digital Audio Lab. (5人)	201: FS-8 アナログ回路実習室 Analog Circuit Lab. (15人)	205: FS-4a 電気機器実習室A Electric Workshop A (15人)	201: FS-5 電子工作室1 Electronic Workshop 1 (15人)			
201: FS-6a 電気実習室1 Electric Lab. 1 (15人)							

◀1991.09.11▶

\*電子実習室2 Fターミナル(●)数=4台

*IE=工業電子科	Industrial Electronics Dept.
*AC=自動制御科	Automatic Control Dept.
*TC=電子通信科	Telecommunication Dept.
*CT=コンピュータ技術科	Computer Technology Dept.
*AV=オーディオ・ビデオ科	Audio-Video Dept.
*FS=基礎科目	Foundamental Subject

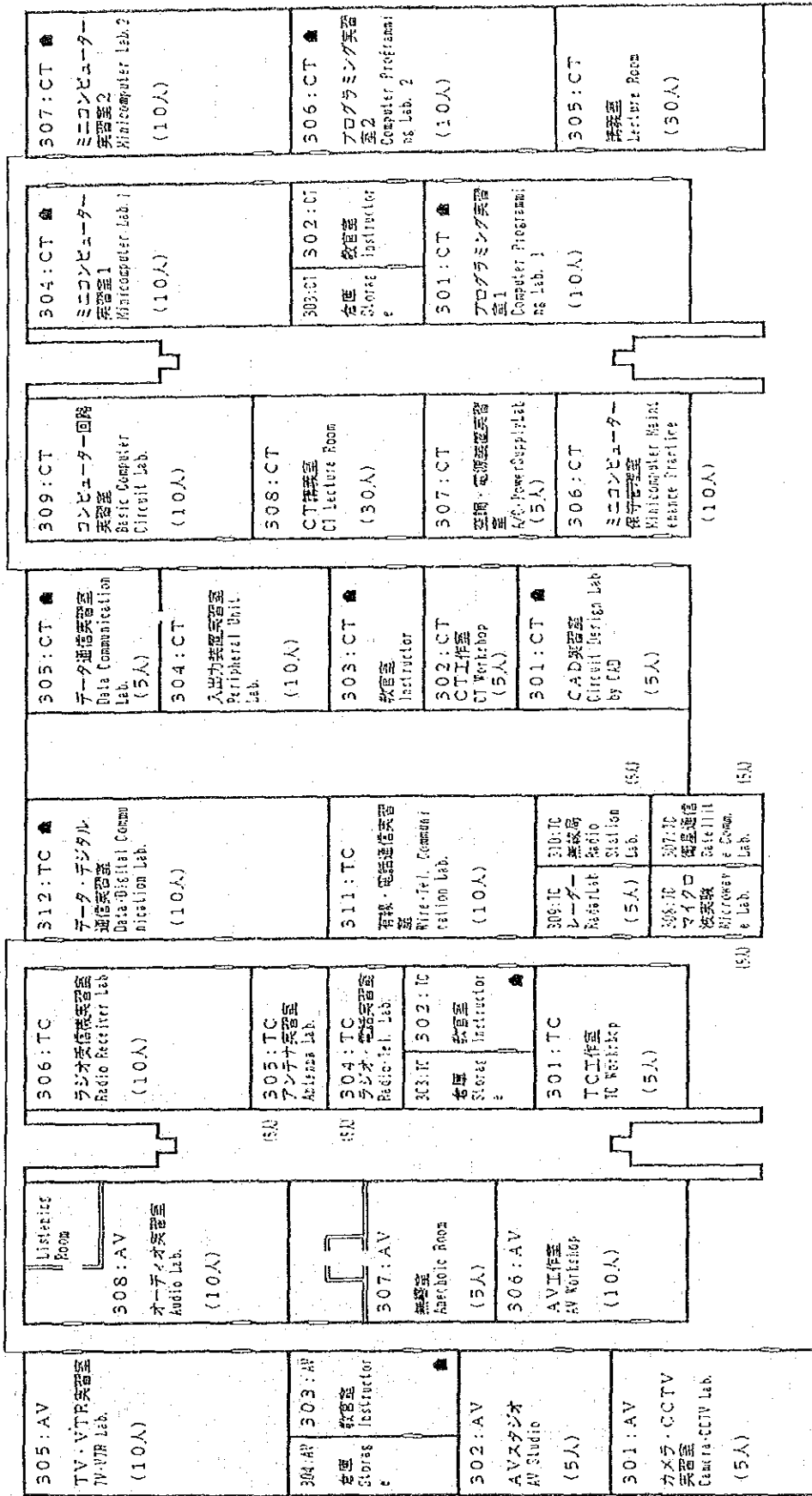


Da 3

Db 3

Dc 3

Dd 3

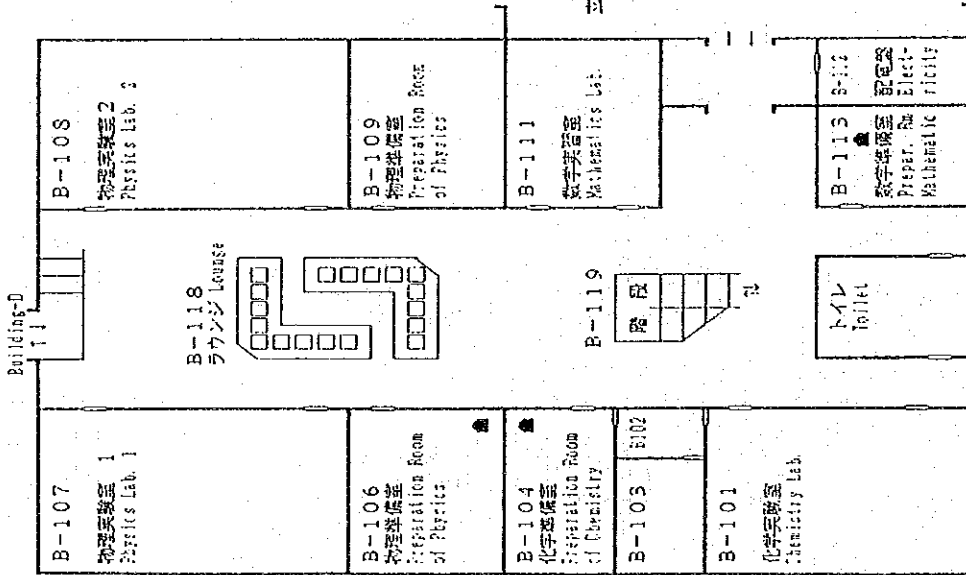


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\*電子実習室SFターミナル(●)数=10台

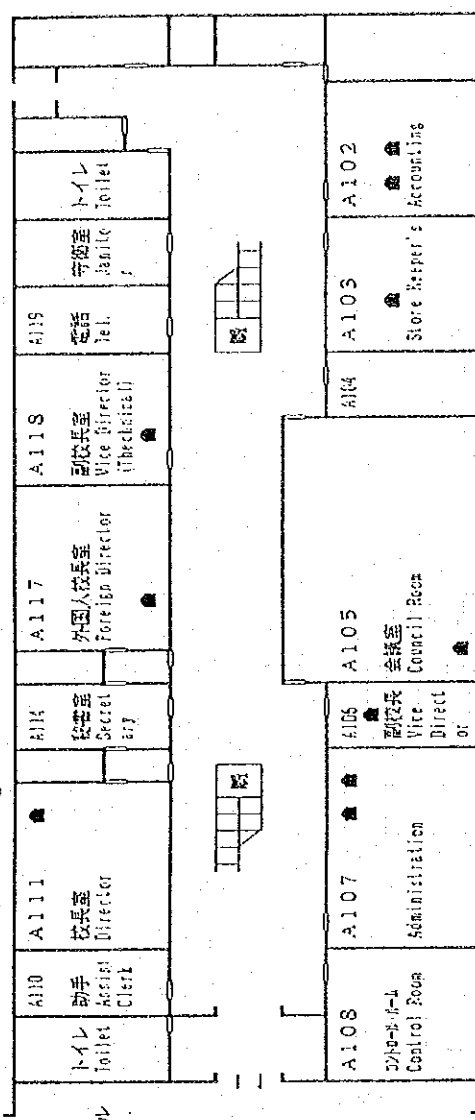
- \*IE=工業電子科 Industrial Electronics Dept.
- \*AC=自動制御科 Automatic Control Dept.
- \*TC=電子通信科 Telecommunication Dept.
- \*CT=コンピュータ技術科 Computer Technology Dept.
- \*AV=オーディオ・ビデオ科 Audio-Video Dept.
- \*FS=基礎科目 Fundamental Subject

# Building-B (1F)



\* B棟1Fターミナル(●)数=5台

# Building-A (1F)



\* A棟1Fターミナル(●)数=10台

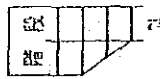
(Admin.)

\* B棟1Fターミナル(●)数=5台

1991.09.11

# Building-B (2F)

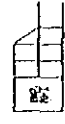
B-206 教室 Class Room	B-207 教室 Class Room
B-205 教室 Class Room	B-208 教室 Class Room
B-204 教室 Class Room	B-209 教室 Class Room
B-203 教室 Class Room	B-210 教室 Class Room
B-202 教室 Class Room	B-211 教室 Class Room
B-201 教室 Class Room	B-212 教室 Class Room
	トイレ Toilet



\*教室のうち1室をCAI室として使用する  
 \*研究室のうち1室をCAI棟研究室として使用する

— B212 (仮)  
 — A216 (仮)

A-217 トイレ Toilet	A-218 研究室 Study Room	A-219 研究室 Study Room	A-220 研究室 Study Room	A-221 研究室 Study Room	A-222 研究室 Study Room	A-223 研究室 Study Room	A-224 研究室 Study Room	A-225 研究室 Study Room	A-226 研究室 Study Room	A-227 研究室 Study Room	A-228 研究室 Study Room	A-229 研究室 Study Room	A-230 研究室 Study Room	A-231 守衛 Janitor	
A-216 研究室 Study Room	A-215 研究室 Study Room	A-214 研究室 Study Room	A-213 研究室 Study Room	A-212 研究室 Study Room	A-211 研究室 Study Room	A-210 研究室 Study Room	A-209 研究室 Study Room	A-208 研究室 Study Room	A-207 研究室 Study Room	A-206 研究室 Study Room	A-205 研究室 Study Room	A-204 研究室 Study Room	A-203 研究室 Study Room	A-202 研究室 Study Room	A-201 研究室 Study Room



\* B棟2Fターミナル (●) 数=1台

\* A棟2Fターミナル (●) 数=5台

1991.09.11

# Building-B (3F)

B-306 教室 Class Room	B-307 教室 Class Room
B-305 教室 Class Room	B-308 教室 Class Room
B-304 教室 Class Room	B-309 教室 Class Room
B-303 教室 Class Room	B-310 教室 Class Room
B-302 教室 Class Room	B-311 特別 守衛 Para. Social Activity
B-301 教室 Class Room	B-313 教室 Class Room

# Building-A (3F)

A-327 LL教室2 LL Room 2	A-328 LL教室 Prepar. Room	A-329 LL教室 Prepar. Room	A-330 LL教室1 LL Room 1
A-326 Social Activ.	A-325 Social Activ.	A-332 LL教室 Preparation Rm.	A-322 LL教室3 LL Room 3
A-326 Social Activ.	A-325 Social Activ.	A-322 LL教室 Preparation Rm.	A-322 LL教室3 LL Room 3
A-326 Social Activ.	A-325 Social Activ.	A-322 LL教室 Preparation Rm.	A-322 LL教室3 LL Room 3

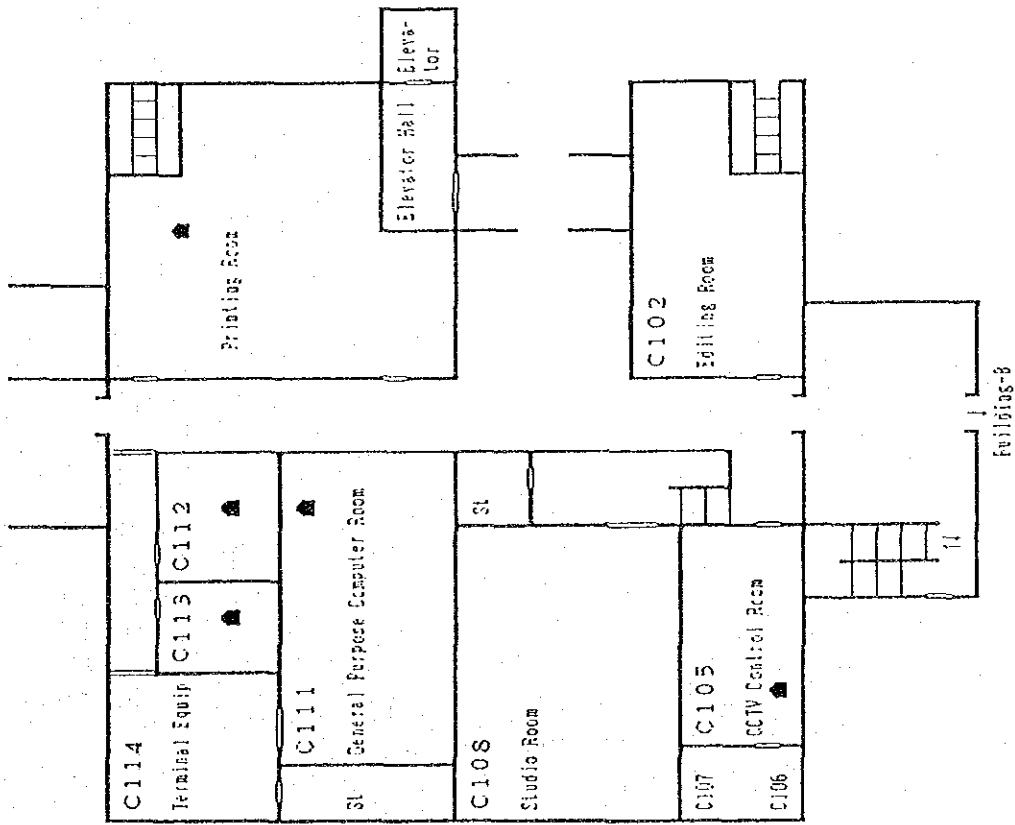
  

A-308 研究室 Study Room	A-309 研究室 Study Room	A-310 研究室 Study Room	A-311 研究室 Study Room	A-312 研究室 Study Room	A-313 研究室 Study Room	A-314 研究室 Study Room	A-315 研究室 Study Room
A-307 研究室 Study Room	A-306 研究室 Study Room	A-305 研究室 Study Room	A-304 研究室 Study Room	A-303 研究室 Study Room	A-302 研究室 Study Room	A-301 研究室 Study Room	A-316 トイレ Toilet

\*A棟3Fターミナル(備)数=4台

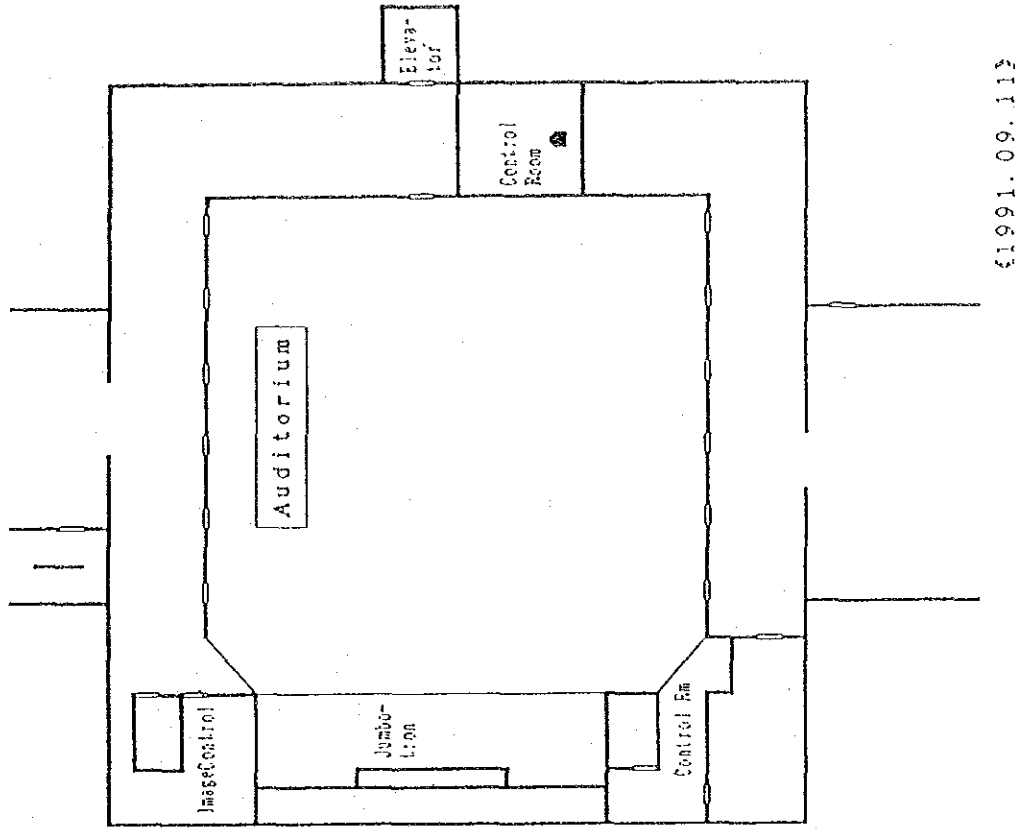
1991.09.11

Building-C:1F



\* B棟1Fターミナル(機)数=5台

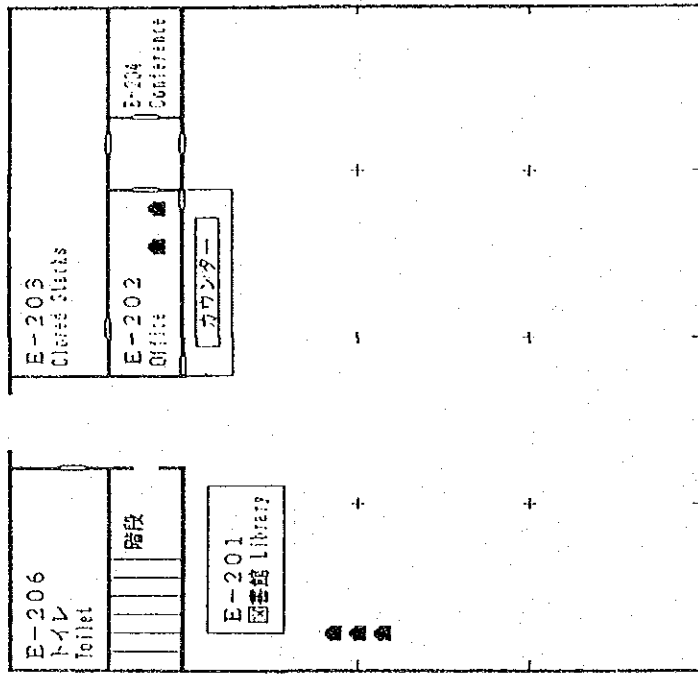
Building-C:3F



€1991.09.113

\* B棟3Fターミナル(機)数=1台

# Building-E (2F)



1991.09.11

\* E棟2Fターミナル(●)数=5台

3 リアド電子技術学院運営計画

STAFF NUMBER (Industrial Dep. , Plan of No.1) rev.1 28 Oct. 1992

	First Year			Second Year			Third Year			
	1	2	3 S.T.	1	2	3 S.T.	1	2	3 S.T.	
School Hour	80		80	80	77	157	80	77	108	265
Sub-total	216		216	216	112	328	216	112	423	751
Staff Number			8			8				8
Chief Teacher										
Teacher	17		17	17	11	28	17	11	28	56
Practical T.	12		12	12	7	19	12	7	24	43
Technician			27			27				27
TOTAL STAFF of the INDUST.			64			82(+18)				134(+52)

Table 3-1 Number of the Common Subject Teachers, Laboratory Assistants and School hours

rev.1 27 Oct. 1992

Subject	Credit	First Year 1993 / 1994				Second Year 1994 / 1995				Third Year 1995 / 1996			
		Teachers	School hours			Teachers	School hours			Teachers	School hours		
			1	2	3		1	2	3		1	2	3
Religion	2	1	8	.	.	1	8	7	.	1	8	7	.
Arabic	2	1	8	.	.	1	8	7	.	1	8	7	.
Mathematics	12	2	32	.	.	3(+1)	32	28	.	5(+2)	32	29	24
English	10	2	32	.	.	3(+1)	32	21	.	4(+1)	32	21	18
Physics	4	1	16	.	.	2(+1)	16	14	.	2	16	14	.
Chemistry	2	1	8	.	.	1	8	7	.	1	8	7	.
Physical Education	3	1	8	.	.	1	8	7	.	1	8	7	6
B.I.A. ※	2	.	.	.	.	.	.	.	.	1(+1)	.	.	12
Sub-total	37	9	112	.	.	12(+3)	112	91	.	16(+4)	112	91	60
Chief Com. Teacher		1				1				1			
Laborat. Assista-nt		1				1				1			
TOTAL	37	11	112	.	.	14(+3)	112	91	.	18(+4)	112	91	60

※ Business and Industrial Administration



Table 4-1 : Number of Industrial Subject Teachers and Practical Teachers ( the First Three Years )

rev.1 27 Oct. 1992

Special Field		First Year ( 1993 / 1994 )		Second Year ( 1994 / 1995 )		Third Year ( 1995 / 1996 )	
		Teachers	Practical	Teachers	Practical	Teachers	Practical
Mechanical Engineering	Lathe	<u>3</u>	2	<u>3</u>	2	<u>3</u>	2
	Sheeting & Welding		2		2		2
Electrical Engineering		<u>8</u>	4	<u>9 (+1)</u>	6 (+2)	<u>9</u>	6
Electronics Engineering		4	2	<u>12 (+8)</u>	6 (+4)	<u>12</u>	6
Audio & Video		.	.	.	.	5 (+5)	<u>4 (+4)</u>
Industrial Electronics		.	.	.	.	5 (+5)	<u>4 (+4)</u>
Automatic Control		.	.	.	.	5 (+5)	<u>4 (+4)</u>
Telecommunication		.	.	.	.	5 (+5)	<u>4 (+4)</u>
Computer Technology		C.S:2	C.S:2	C.S:3(+1)	C.S:3(+1)	C.S:3 C.T:8(+8)	C.S:3 CAD:2(+2) C.T:6(+6)
TOTAL(Teacher & Practical Teach.)		<u>17</u>	12	<u>28(+11)</u>	19(+7)	<u>56(+30)</u>	<u>43(+24)</u>
Chief Teachers		8		8		8	
TOTAL		<u>37</u>		<u>55 (+18)</u>		<u>107 (+52)</u>	

(NOTE)The notation of the 16 means the points of the revision.(Oct.27,1992)

Table 4-2 School hours of Industrial Subjects and arrangement of Practical Teachers

rev.1 28 Oct. 1992

Subjects	Grade	Parts	Credits	First Year 1993 / 1994			Second Year 1994 / 1995			Third Year 1995 / 1996			Practical Teacher ( Assistant )	
				1	2	3	1	2	3	1	2	3		
FS-1-1 Computer Science	1	2p	2	32			32			32			Computer : 2	
FS-2-1 Electronic Drawing 1	1	1p	2	16			16			16				
FS-3 Working 1	1	3p	6	72			72			72			Lathe:2, Sheet:2, Electric:2	
FS-6 Electric Lab and Practice	1	2p	4	64			64			64			Electric : 2	
FS-7 Electronic Lab and Practice	1	2p	2	32			32			32			Electronic : 2	
FS-11 Fund. of Electricity	1	1p	6	48			48			48				
FS-12 Electronic Devices	1	1p	4	32			32			32				
FS-1-2 Computer Science	2	1p	2				14	14		14	14		Computer : 1	
FS-2-2 Electronic Drawing 2	2	1p	2				14	14		14	14			
FS-4 Working 2A	2	2p	4				28	28		28	28		Electronic:2	
FS-5 Working 2B	2	2p	4				28	28		28	28		Electronic : 2	
FS-8 Analog Lab and Practice	2	1p	2				14	14		14	14		Electric : 1	
FS-9 Digital Lab and Practice	2	1p	2				14	14		14	14		Electronic : 1	
FS-13 Analog Electronics	2	1p	4				28	28		28	28			
FS-14 Digital Electronics	2	1p	7				49	49		49	49			
FS-2-3 Electronic Drawing (CAD)	3	2p	2								24			
FS-10 Practice	3		3								90			
FS-15 Electronic Technology	3		6								72			
Project Study	3		5								165			
Lecture 1	3	1p	2								12			
Lecture 2	3	1p	2								12			
Lecture 3	3	1p	2								12			
Practice 1, 2, 3	3	3p	8								144		A.V:4, I.E:4, A.C.:4, T.C.:4, C.T.:8	
<u>T o t a l</u>			<u>83</u>	<u>296</u>	<u>296</u>	<u>296</u>	<u>296</u>	<u>189</u>	<u>296</u>	<u>189</u>	<u>531</u>	<u>189</u>	<u>531</u>	Industrial Pract. Teachers = 43 P

Underlines, for example 2, are the points of the revision 1.

Table 5 - 1 Example of Allotment of Lessons to Industrial Subject Teachers

1st Grade ( Lecture = 80 h , Practice = 216 h , Total = 296 h , Teachers = 17 P , Practical Teachers = 12 P )

Rev. 2, 27 Oct. 1992 6 Mar. 1990

Subject	Part	Credit	Hours	Classes												Practical Teacher									
				C1	C2	M1	M2	M3	Er 1	Er 2	Er 3	Er 4	Er 5	Er 6	Er 7		Er 8	En 1	En 2	En 3	En 4				
FS-1-1 Computer Science	2p	2	32	16	16																			Computer : 2	
Prac. 56 h				1-1	1-2																				
FS-2-1 Electronic Drawing 1	1p	2	16																						
Prac. 56 h				8-1	8-2																				
FS-3 Working 1	3p	6	72																						
2 classes' s lessons				1-1, 2-1	1-2, 2-2																				
Prac. 168 h				5-1, 6-1	3-2, 4-2																				
FS-6 Electric Lab and Practice	2p	4	64																						
Prac. 112 h				7-1, 8-1	5-2, 6-2																				
FS-7 Electronic Lab and Practice	2p	2	32																						
Prac. 56 h				1-1	7-2																				
FS-11 Fundamental of Electricity	1p	6	48																						
Lect. 168 h				3-1	3-2																				
FS-12 Electronic Devices	1p	4	32																						
Lect. 168 h				5-1	5-2																				
Total Hours / Week			296	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	Prac.T.=12

[Introductory Remarks ]

( 2 ) Notation of Classes , Home Room Number and Part Number. ( 3 ) The notation of the 1-1, 2-1 means that two classes' s lessons will be allotted in the same time , i.e. , the 1st Homeroom' s and the 2nd Homeroom' s .

- ( 1 ) Symbolization of Special field
- C . . . . Computer Science
  - M . . . . Mechanical Engineering
  - Er . . . . Electric Engineering
  - En . . . . Electronics

- 6 . . . . Classes in a week
- 1-1 . . . . ( Home room Number ) - ( Part Number )
- 1 . . . . From 1-1 to 4-1 , four Parts ( 1-1, 2-1, 3-1, 4-1 ) in a week .
- 4-1 . . . . 1st Part of the 4th Home Room .

( 4 ) Underlines , for example 2 , are the points of the revision 2 .

This notation means that this teacher takes charge 8 unit-hours in a week .

Table 5 - 2 Example of Allotment of Lessons to Industrial Subject Teachers  
 2nd Grade ( Lecture = 77 h, Practice = 112 h, Total = 189 h, Teacher = 11 P, Practical Teacher (Assist.) = 7 P ) 6 Mar. 1990

Subjects	Part	Credit	Hours	Teacher								Practical Teacher				
				C3	Er1	Er2	En1	En2	En3	En4	En5		En6	En7	En8	
FS-1-2 Computer Science Prac. 56 h	1p	2	14	14												Computer: 1
FS-2-2 Electronic Drawing 2 Prac. 56 h	1p	2	14		8 1, 2 3	2 4									<u>6</u> 5, 6 7	
FS-4 Working 2A Prac. 112 h	2p	4	28		12 1, 2 3	16 4, 5 6, 7										: 2
FS-5 Working 2B Prac. 112 h	2p	4	28						<u>8</u> 1, 2 7	<u>12</u> 3, 4 7	8 5, 6					: 2
FS-8 Analog Lab and Practice Prac. 56 h	1p	2	14								6 1, 2 3	8 4, 5 6, 7				: 1
FS-9 Digital Lab and Practice Prac. 56 h	1p	2	14				4 1, 2	4 3, 4	4 5, 6	2 7						: 1
FS-13 Analog Electronics Lect. 112 h	1p	4	28										<u>16</u> 1, 2 3, 4	<u>12</u> 5, 6 7		
FS-14 Digital Electronics Lect. 196 h	1p	7	49				14 1, 2	14 3, 4	14 5, 6	7 7						
Total Hours / Week			<u>189</u>	14	<u>18</u>	<u>18</u>	18	18	18	<u>17</u>	<u>18</u>	<u>16</u>	<u>16</u>	<u>18</u>		Prac.T. = 7

Underlines for example 2, are the points of the revision 1. 27, Oct. 1992

Table 5 - 3 Example of Allotment of lessons to Industrial Subject Teachers

3rd Grade

( Lecture =108 h, Practice = 349 h, Total = 457 h, Chief of Teachers = 5 p, Teacher = 24 p, Practical Teacher (Assist.) = 20 p ) rev.2 29,Oct. 1993

Subject	Part	Credit	Hours	A.V. Department				I.E. Department				A.C. Department				T.C. Department				C.T. Department																		
				Ch	T1	T2	T3	T4	Ch	T1	T2	T3	T4	Ch	T1	T2	T3	T4	Ch	T1	T2	T3	T4	Ch	T1	T2	T3	T4	T5	T6	T7	T8						
FS-2-3 Electronic Drawing Prac. 56 h	2 P	2	2 4		2			2			2						2						2						4									4
FS-10 Practice Prac. 84 h		3	3 6	3				3			3						3						3						3			3						3
FS-15 Electronic Technology Lect. 168 h		6	7 2			6	6						6	6											6	6								6	6		6	
Project Study Prac. 140 h		5	1 4 5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Lecture 1 Lect. 56 h	1 P	2	1 2					2									2																			2	2	
Lecture 2 Lect. 56 h	1 P	2	1 2		2						2																								2	2		
Lecture 3 Lect. 56 h	1 P	2	1 2					2									2																			2	2	
Practice 1, 2, 3 Prac. 224 h	3 P	8	1 4 4	8	8	8					8	8	8																						8	8	8	
Total Hours / Week			4 5 7	7	18	18	17	16	7	18	18	17	16	7	18	18	17	16	5	18	18	17	16	5	18	18	17	16	5	17	17	18	18	19	19	18	18	

Table 6-1 : Example of Assignment Number of Students to the Courses FS-10, FS-15 (Unit : Student) 27, Oct. 1992

	Compulsory Course 1st & 2nd quarters										Elective Course												Charge							
											3rd quarter						4th quarter													
	CT	AV	AC	TC	IE	CT	AC	IE	CT	AV	TC	A group	B group	A group	B group	A group	AC	IE	CT	AV	TC	A group		B group	A group	B group				
Course of FS-10, FS-15	CT	AV	AC	TC	IE	CT	AC	IE	CT	AV	TC	CT	AC	IE	CT	AV	TC	CT	AC	IE	CT	AV	TC	CT	AC	IE	CT	AV	TC	
A. Acoustic Device		30				6	5	5	16	6	5	11	6	5	16	6	5	11	6	5	16	6	5	11	6	5	11	AV		
B. Picture Communication						6	5	5	16																				AV/TC	
C. Electronic Communication	30	30																											TC	
D. Application of electronic Communication						6	5	5	16	12	5	17	6	5	5	16	5	5	16	5	5	16	5	5	16	5	5	16	TC	
E. Electronic Computer							10	10	20																				CT	
F. Automatic Control						6	5	5	11	6	5	5	16	6	5	11	6	5	16	6	5	11	6	5	16	6	5	16	AC	
G. Industrial Electronics						6	5	5	11	6	5	5	16	6	5	11	6	5	16	6	5	11	6	5	16	6	5	16	IE	
H. Digital Circuits		30																											CT	
I. Micro-processor Programming	30	30														10	10	20											CT	
J. TV System		30																											AV	
TOTAL	60	60	60	60	60	30	30	30	30	90	30	30	30	90	30	30	30	90	30	30	30	90	30	30	30	90	30	90		

年次授業 (The Annual Time Chart of Each Subject) ( WEEK - COMMENTS )

June, 1990 made by T.Aoki

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
PS-1-1 G1(2) COMPUTER SCIENCE (情報技術) 1年																														
	1- Handling of Computer System 1-1. Basic Operation Data-statement 1-2. Transfer of Programming Language format assignment judgement, jump display repetition data input subroutine	2- Problem Solving Language for Computer 2-1. Procedure of Problem Solving 2-2. Expression Techniq of Flowchart 2-3. Programming Technique																												
PS-1-2 G2(2) COMPUTER SCIENCE (情報技術) 2年	1- Basic Data Processing Technology 1-1. Numerical Computation Newton-Raphson method Simpson method Gauss-Seidel method Runge-kutta method Graphic expression	1-2. Simulation & Statistical Technique random numbers Monte-Carlo simulation queue solving etc.																												
PS-2-1 G1(2) DRAWING 1 (製図1年)	1- Fundament of Drawing 1-1. List of Instruments 1-2. Lines & Characters 1-3. Drawing Symbols 1-4. Plan 1-5. Measuring/Dimension 1-6. Finish Mark 1-7. Material Symbols	2- Mechanical Parts 2-1. Screw 2-2. Bolt & Nut 2-3. Washer 2-4. Key 2-5. Gear																												
PS-2-2 G2(2) DRAWING 2 (製図2年)	1- Parts for Electronic Devices 1-1. Rotary Switch 1-2. Semiconductor Element 1-3. Printed Wiring Plate 1-4. Semiconductor IC	2- Electrical & Electronic Equipment 2-1. Design & Drawing of Circuit resistance attenuator filter transistor LP amp.																												
PS-2-3 G3(2) CAD (CAD3年)	1- Handling of CAD System 2- Drafting of Machine Elements 3- Design & Drafting of Stereo App.	4- Drafting of Superheterodyne App. 5- Drafting of Instrumentation System																												

The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
PS-3 G1(6) WORKING 1 (工作1年)	1. Lath Working 1-1. Machine Tools 1-2. Structure & Function 1-3. Tool & Material 1-4. Element Work 1-5. Lath Operation 1-6. Instrumentation	2. Sheeting 2-1. Materials of Sheet 2-2. Bending & Cutting 2-3. Piercing & Press Working 2-4. Drilling & Sawing 2-5. Resistance Welding																												
PS-4 G2(4) WORKING 2A (工作A.2年)	1. Electric Working Technique 1-1. Pushing Test of Puses 1-2. Handling & Maintenance of Connector & Parts 1-3. Confirmation of safety Current 2. Wiring Practice of Indoor Wiring 2-1. Power Switch/Breaker/Fuse Box 2-2. Wire Connecting Technique	2-3. Indoor Wiring 2-4. Wiring for Home Electronics 3. Handling of DC Motor & Generator 2-1. Shunt Motor 2-2. Series Motor 2-3. Compound Motor 2-4. Assembling of Motor-Generator																												
PS-5 G2(4) WORKING 2B (工作B.2年)	1. Assembling of Transistor Amplifier Operational Amp. 2. Interphone 3. CR Oscillator 4. Pulse Generator	6. Assembling of Power Supply 7. NFB Circuit App. 8. Radio Receiver 9. SCR Light Controller 10. Flashing Signal																												
PS-6 G1(4) ELECTRIC LAB. (電気実習) 1年	1. Electric Circuit & Material 1-1. Current Meter & Voltmeter 1-2. Ohm's Law, handling of Resistors 1-3. Serial & Parallel of Resistors 1-4. Kirchhoff's Law 1-5. Affection of meters to circuits 1-6. Wheatstone Bridge 1-7. Measurement of Low & High $\Omega$ 1-8. of Temperature dep. of $\Omega$ 1-9. of E.M.F. by DC Potential. 2. Working by Electric Current Flowing 2-1. Joule's Law 2-2. Measu. of Electric Power & Energy 2-3. of Thermo E.M.F. 2-4. of discharge of cells 3. Relation betw Magnetism & E. Current 3-1. Generation of Magnetic Fields 3-2. Magnetic Flux Density 3-3. Magnetization Curves 3-4. Electromagnetic Force 3-5. Meas. of Magnets & Actuators	4. Electromagnetic Induction Phenomena 4-1. Experiment of E.M. Induction 4-2. Meas. of Self-inductance Factor 4-3. of Mutual-inductance Factor 5. Action of Static Electricity 5-1. Meas. of Electrostatic Capacity 5-2. Serial & Parallel Capacitors 5-3. Electric Discharge Phenomenon 6. Expression of Alternating Current 6-1. Handling of Oscilloscope 6-2. Meas. of Waveforms & Phases																												



The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (Unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
PS-7 G1(2) ELECTRONIC LAB (電子実習) 1年	1. Fundamental Measurements of Semiconductors 1-1. Characteristics of Diodes 1-2. Measurement of Half/Full Wave Rectifier 1-3. ... of Voltage Doubler Rectifier 1-4. ... of Thyristor 1-5. ... of Zener Diode 1-6. ... of Thermister 1-7. ... of Sensor 1-8. Handling of Oscilloscope																													
PS-8 G2(2) ANALOG LAB. (アナログ実習) 2年	1. Amplifier Circuits 1-1. Negative Feedback Amplifier Circuit 1-2. Class C Single Amplifier 1-3. Class B Push-Pull Amplifier 1-4. Single Ended Push Pull Amplifier 1-5. Differential Amplifier	2. Sinusoidal Oscillator Circuits 2-1. Tuned Collector Circuit 2-2. Colpiz Oscillator Circuit 2-3. Hartley Oscillator Circuit 2-4. RC Oscillator (Phase-Shift) (Wien Bridge) 2-5. Blocking Type Oscillator																												
PS-9 G2(2) DIGITAL LAB. (デジタル実習) 2年	1. Pulse Circuits 1-1. Transistor Multivibrators 1-2. Flip-flop (R-S, J-K types) 1-3. Schmitt Trigger Circuit 1-4. Clipping, Limiting, Slicing Ccts	2. Logic Circuits 2-1. AND/OR/NOT Circuits 2-2. NAND/NOR Circuits 2-3. Boolean Algebra 2-4. De Morgan's Theorems 2-5. 1st/2nd Absorption Law 2-6. Comutation/Association Law																												

The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
PS-10 ELECTRONIC PRACTICE (電子実習) 3年	1. Acoustic Devices 1-1. Characteristic of Audio. Sound 1-2. Human Sense of Hearing 1-3. Microphone/Sound Pick-ups 1-4. Speaker/Enclosure 1-5. Stereo Technology 1-6. Acoustic Room 1-7. Audio Tape Recorder 1-8. Digital Recording	2. Picture Communications 2-1. Camu. Practice of Facsimile Basic operation, maintenance 2-2. Practice of Television antenna, picture IP cct, detector CRT, deflectors, audio cct, AGC 2-3. Practice of Color Television color system, color receiver set	3. Electronic Communications 3-1. Practice of Telephone Devices Comm. Practice of Telephone Wiring & Setting of Telephone 3-2. Practice of Radio Devices Setting & Measuring of Antenna Operating Prac. of AM sets FM sets Adjustment Prac. of AM/FM Radio	4. Application of E. Communications 4-1. Optical Communication Measuring of Optical Com. 4-2. Microwave Communication Operating Prac. of Microwave S. Measuring of Microwave System	5. Electronic Computer 5-1. Logic Cct binary/decimal converter Boolean algebra adder/subtractor/register 5-2. Hardware of Computer sensor/peripherals arithmetic units 5-3. Software of Computer programming/assembler, compiler	Test	8. Digital Circuits 8-1. Combinational Logic Circuits comparators display encoder, decoder, multiplexer/demultiplexer ROM, RAM, PLA 8-2. Sequential Logic Circuits registers counters(asynchronous/synchronous)	9. Microprocessor Programming/Control 9-1. Programming data/address bus instruction set programming of machine language 9-2. I/O Control DC motor, buzzerby ON/OFF control speed measurement of DC motor with photo interrupter 9-3. Temperature Measurement temperature measurement of water using A/D converter I/O device control	10. TV Systems. 10-1. Basic Knowledge of Color & sight sense 10-2. Color TV System 10-3. Color TV Broadcasting Technol 10-4. Antenna/Receiving System 10-5. Picture Tube of Color TV Set 10-6. Deflectioncct & high voltage 10-7. Adjustment of color TV 10-8. Audio Multiplex Broadcasting/ receiver set	Test																				
											6. Automatic Control 6-1. Feedback Control Systems 6-2. Control Elements & Response 6-3. Structure of Control Units 6-4. Servo Mechanism 6-5. Sequential Control relay cct, hydraulic Seq. cont. pneumatic sequence	7. Industrial Electronics 7-1. Switching Devices motor control by SCR, TRIAC light control by thyristor 7-2. HP application application of gass laser light (mirror reflection on speaker) inductive/dielectric heating ultrasonic application 7-3. Power Electronics DC motor/induction motor control rectifier cct frequency by DC voltage with inverter																		
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This subject consists of 10 courses read 1 through 10, so two courses compulsory for a student in a first semester, and other two courses can be selected by a student depending upon the situation of each department. One subject finishes in seven weeks. Then total hours are 84 hours ( 3 hours x 7 weeks x 4 courses ).  
 (この科目は1から10までの10コースで構成されています。学三は前期2コースを必修とし、後期2コースを学務規定の中から選択します。1コースは週3時間で、7週で修了します。)  
 For example

Department	Four Quarters				Remarks
	1st	2nd	3rd	4th	
AV Dept	1	10			except the courses studied in the first semester ditto ditto ditto ditto
IZ	8	9			
AC	8	9			
TC	9	10			
CT	3	9			
	( Compulsory )				( Elective )

PS-10(Practice) and PS-15(Lecture) consist of same courses, then the students of the course 1 in PS-10 must study in the same course as in PS-15.

The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	甲															乙														
PS-11 GI(6) FUNDAMENTAL OF ELECTRICITY (電気基礎) 1年	1. Electric Circuit e.m.f. potential Ohm's law conductivity resistivity	2. Action of Current Caloric power Joule's law Seebeck effect Peltier effect battery	3. Magnetism by Current m. field & fluxes m. field by e. current m. material, m. circuit e.m. forces	4. Electro-magnetic Induction Phenomena e.m. induction self-induction mutual-induction combination of inductors	5. Static Electric characteristics e.s. capacity electric discharge	6. Measurements meters V, A, Ω potentiometer	7. Expression of A.C. waveform generation of A.C. quantity of A.C. phase of A.C. calculation	8. A.C. Circuits resistance cct inductance cct capacitance cct	9. Complex of A.C. cct serial connection parallel connection electric power of A.C. cct 10. 3-phase A.C. cct characteristics calculation electric power revolving m. fie	11. Non-sine Wave properties pulse waves	12. Measurement waveforms power frequency inductance capacitance	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test
PS-12 GI(4) ELECTRONIC DEVICES (電子技術) 1年	1. Electronic Cct Devices 1-1. Characteristics of Semi. semiconductor free electron energy bands pn junction	1-2. Diodes p.n. structure characteristic rating	1-3. Bipolar Transistor basic structure activity collector cut-off max. rating	1-4. Uni-polar Transistor structure of FET Junction FET MOS FET	1-5. Integrated Cct manufacture of IC merit/demerit	1-6. Sensors structure characteristic	1-1. CFT structure/action	2. Electronic Circuits 2-1. Transistor Amp. h-parameter equivalent cct amplification factor classification of amp.	2-2. Basic Cct stability of biasing sort of biasing thermal compensating CR amp. DC amp. transformer amp.	2-3. Small Signal Amp.	3. DC Power Supply 3-1. Fundamental transformation, rectification capacitor input LC type	3-2. Filter Cct LC type	3-3. Characteristic of Power Supply voltage regulation ripple, efficiency	3-4. Stabilizing Cct	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test	Test





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TC	9	10			
CI	3	9			
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The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
AV1 G3(5) Project Study (課題研究)																														
AV2 G3(2) AUDIO ELECTRONICS (音響技術)																														
AV3 G3(2) Video Electronics (ビデオ技術)																														
AV4 G3(2) CCTV & STUDIO (閉回路テレビ / スタジオ 技術)																														
AV5 G3(6) AV-6 AV-7																														



The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
IE-1 G1(6) Project Study (課題研究)	1. Assembling of Microrobot with Microcomputer 2. Assembling and Experiment of Multipler Instrumentation System 3. Control Practice of Mechanical Robot Arms 4. Practice of Sequence Control Systems 5. Practice of Feedback Control System 6. Practice of Microcomputer Control of Environmental Test Equipment 7. Practice of Ultrasonic Applications 8. Practice of High Frequency Heating																													
IE-2 G3(2) POWER ELECTRONICS (パワーエレクトロニクス / 高周波応用)	1. DC Machines 1-1. DC Generator 1-2. DC Motor 2. Transformer 2-1. Structure & Equivalent Cct 2-2. Characteristics 2-3. Connection 3. AC Revolving Machine 3-1. 3-phase IM 3-2. 3-phase SG 3-3. 3-phase SM 3-4. AC Comutator Motor 4. Rectifiers 4-1. 3-phase Rectifier 4-2. Volt. Stabilizer 4-3. Thyristor															Test 5. Inverters 5-1. Power Conversion 5-2. Self-excited Inverter 5-3. Load Comutation Inverter 6. Ultrasonic Application 6-1. Generation/Detection 6-2. Characteristic 6-3. Defect Searcher 5-4. Processor 5-5. Condensation etc. 7. HF Heating 7-1. Induction Heating 7-2. Dielectric Heating 8. Machine Control 8-1. Elevator 8-2. Air-condition														
IE-3 G3(2) MICRO-PROCESSOR (マイクロープロセッサ技術)	1. Hardware Technology 1-1. Computer System 1-2. Data Representation 1-3. Logic Circuit 1-4. Memory Unit 1-5. Arithmetic Unit 1-6. Peripheral Unit 2. Assembler 2-1. Structure 2-2. CPU 2-3. Assembler Programming 2-4. Practices																													
IE-4 G3(2) INSTRUMENTATIO & CONTROL (計測/制御技術)	1. Instrumentation 1-1. Equipments 1-2. Error, Measured value 2. Length 2-1. Unit of Length 2-2. Electrical Inst. 3. Time, Velocity 3-1. Instr. of Time 3-2. Instr. of Velocity 4. Fluid 4-1. Instr. of Fluid 4-2. Liquid Level Meter 5. Temperature & Humidity 5-1. Instr. of Temperature 5-2. Instr. of Humidity 6. Sensors 6-1. Color Sensor 7. Digital Control 7-1. Control 7-2. Microcomputer 7-3. Industrial Robots															Test : 3. Computing Control 3-1. Control Theorea 3-2. Interfaces 3-3. I/O Devices 3-4. Interrupt 3-5. Practices 8. Feedback Control 8-1. Structure 8-2. Sorts of Controls 8-3. Block Diagrams 8-4. Characteristics 8-5. Dynamic Characteristics 9. Servo Mechanism 9-1. Oil-pressure type 9-2. Electrical type 9-3. Digital/Analog type 9-4. Application														
IE-5	1. Practice of Microprocessor/Logic Circuit Technology 1-1. Machine Language Programming 1 1-2. Machine .. 2 1-3. Machineis .. 3 1-4. Develepment of Programing by mean of Microprocessor																													
IE-6 G3(6)	2. Practice of Power Electronics and High Frequency Application 2-1. Single-phase Rectifier, Three-phase Rectifier Circuit 2-2. AC Stabilized Power Supply Circuit 2-3. DC .. 2-4. SCR Circuit 2-5. Fundamental of Inverter(Three-phase PWM) 2-6. Non-power-off Powere Supply(PWM Inverter)																													
IE-7	2-7. Many kinds of Motor Controls 2-8. Measurement by mean of Ultrasonic Defect Searcher 2-9. Application of Ultrasonics(washing, wetting, welding, processing) 2-10. Processing of High Frequency Heating 3. Practice of Measurement/Control 3-1. Sequence Control of Motors 3-2. ... of Elevator 3-3. Feedback Control of AC Voltage 3-4. ... of DC Motor 3-5. Control of Robot Arms 3-6. Position Control																													

The Annual Time Chart of Each Subject ( WBBE - CONTENTS )

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
AC-1 G3(5) Project Study (課題研究)	1.CNC(computer Numerical Control) Practices 1-1.Structure and Function of CNC Machine Tool 1-2.Function and Operation of Key Board 1-3.Control System 1-4.Programming 1-5.Positioning 1-6.Automatic Working of CNC Machine Tool 1-7.Maintenance and Oiling																													
AC-2 G3(2) Digital Control (デジタル制御技術)	1.Fundamentals 1-1.Concepts 1-2.Microcomputer 1-3.Mechanism of Micro-computer 1-4.Flow Chart 1-5.Programming Language	2.Hardware of CPU system 2-1.Control Circuit 2-2.Arithmetic Logic cct 2-3.Handling of Machine Lang. 3-1.Excise of M.L. 3-2.Application Program.																												
AC-3 G3(2) PNEUMATIC/ HYDRAULIC CONTROL (空圧/油圧制御技術)	1.Pneumatic Pressure 1-1.Unit of P.P. 1-2.Principle 2.Organization of Pneumatic P. 2-1.Source 2-2.Refining Equipment 2-3.Control Equipment 2-7.Equipment for Vacuum	3.Pneumatic Circuit 3-1.Circuit Design 3-2.Driving Circuit 3-3.Control Circuit																												
AC-4 G3(2) AUTOMATIC CONTROL (自動制御技術)	1.Automatic control System 1-1.Automation & Automatic Control 1-2.Control 2.Feedback Control 2-1.Signal & Structure 2-2.Types of Feedback Control	3.Control Element & Responses 3-1.Step Response 3-2.Proportional/Integration 3-3.Differential/Waste Time																												
AC-5	1.Digital Control Practice 1-1.Hardware of CPU 1-2.Exercise of Machine Language 1-3.Application Training of Machine Language 1-4.Introduction of Mechatronics 1-5.Application of Mechatronics	2.Pneumatic/Hydraulic Control Practice 2-1.Basic Working of Pneumatic System 2-2.Basic Control System of Pneumatic System 2-3.Assembling and Disassembling of Air Robot 2-4.Construction of Hydraulic Circuit 2-5.Setting Practice of Hydraulic Equipment																												
AC-6	1-1.Hardware of CPU 1-2.Exercise of Machine Language 1-3.Application Training of Machine Language 1-4.Introduction of Mechatronics 1-5.Application of Mechatronics	3.Automatic Control System Practice 3-1.Feedback Control 3-2.Sequential Control 3-3.Servo Control																												
AC-7	1-1.Hardware of CPU 1-2.Exercise of Machine Language 1-3.Application Training of Machine Language 1-4.Introduction of Mechatronics 1-5.Application of Mechatronics	3.Automatic Control System Practice 3-1.Feedback Control 3-2.Sequential Control 3-3.Servo Control																												

The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
TC-1 GS(6) Project Study (模型研究)															15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
																6. Practice of Carrier Frequency Communication	7. ... of Optical Transmitter	8. ... of Facsimile Device	9. ... of Micro Wave Transmitter	10. ... of Sound Recorder System													
TC-2 GS(2) WIRE/TELEPHONE COMMUNICATION (有線/電話 通信技術)															15																		
																1. Information & Telecommunication	3. Wire Transmission																
																1-1. Development & Social Necessity	3-1. Voice Transmission																
																1-2. Telecommunication	3-2. Telephone																
																1-3. Construction of Network	3-3. Telegram System																
																1-4. Equipments	3-4. Teletypewriter																
																2. Telecommunication Lines	3-5. Carrier Telephony																
																2-1. Theory of Transmission	3-6. Multiple System																
																2-2. Telecommunication Lines	3-7. Repeater System																
																2-3. Noise, Cross-talk, Distortion																	
TC-3 GS(2) RADIO/ MICROWAVE COMMUNICATIONS (無線/マイクロ波 通信技術)															15																		
																1. Radio Waves & Antenna	3. Radio Receivers																
																1-1. Antenna/Wave propagation	3-1. Construction																
																1-2. Ionosphere	3-2. Superheterodyne																
																1-3. Feeder	3-3. AM/FM Receiver																
																2. Radio Communication System	3-4. SSB Receiver																
																2-1. System																	
																2-2. Radio Station																	
TC-4 GS(2) DATA/DIGITAL COMMUNICATION (デジタル/デジタル 通信技術)															15																		
																1. Data Communication	4. Fundamentals of D.C.																
																1-1. Data communication/transmission	4-1. Structure of Transmission																
																1-2. Characteristics	4-2. Serial/Parallel Transmission																
																1-3. System	4-3. Synchronous System																
																1-4. Computerized Society	4-4. DC/AC Transmission																
																2. Construction of Data Com.	4-5. Modulation & Demodulation																
																2-1. Construction of Data Com.	4-6. Frequency Division Multiplex																
																2-2. Data Transmission System	4-7. PCM Transmission & Time D.M.																
																2-3. Data Transfer System	4-8. Transmission Rate & Mod. S.																
																2-4. System Reliability	4-9. Transmission Rate & Freq. Domain																
																2-5. System Configuration	4-10. Quality of Transmission																
																3. Application Of Data Com.	5. Communication Cct & System																
																3-1. Online & Offline	5-1. DC Cct. & AC cct																
																3-2. Data Collection & Delive	5-2. Digital/Analog Cct																
																3-3. Message Switching	5-3. Pair Wire Cct & Four Wire Cct																
																3-4. Inquiry/Response	5-4. Circuit Network																
																3-5. Transacation Processing	5-5. Circuit Control																
																3-6. Line Shearing	5-6. Com. Method																
																3-7. Remote Bach																	
																3-8. Computer Network																	

The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (unit)	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15														30 期
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
TC-5	2. Radio/Microwave Communication Practice														
TC-6	2-1. Measuring of Radio Wave and Electronic Field Intensity														
	2-2. Characteristic Measurement of Antenna Directivity														
TC-7	2-3. Operating Practice of Radio Station(1)														
	2-4. .. .. (2)														
TC-7	2-5. Characteristic Measurement of Receiver														
	2-6. .. .. of AM/FM Receiver														
	2-7. .. .. of SSB(single side band) Transmitter														
	2-8. Operating Practice of Mobile Radio Receiver/Transmitter														
	2-9. .. .. of Micro Wave Equipments														
	2-10. .. .. of Radar Units														
	2-11. .. .. of Radio Direction Finder														
	1. Wire/Telephone Communication Practice														
	1-1. Measuring of Transmission Lines and Distributing Constants														
	1-2. Characteristics Measurements of Attenuator														
	1-3. Communication Practice of Teletypewriter														
1-4. Operating Practice of Electronic Exchanger															
1-5. .. .. of Carrier Communication Devices															
1-6. .. .. of Digital Communication ..															
1-7. Practice of Computer Communication															
1-8. Operating Practice of Optical Communication															
1-9. .. .. of Time Division / Freq. Division Multiplexer															
1-10. .. .. of PCM(Pulse-Code Modulation) System															
1-11. .. .. of Facsimile Terminal Equipment															

The Annual Time Chart of Each Subject ( WEEK - CONTENTS )

Subject Grade (unit)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30									
CT-1 G3(5) Project Study (課題研究)																																							
	1. On the construction of I/O Devices 2. Assembling of Application Units with Electrical Circuits 3. Study on Maintenance & Management of Computer																																						
CT-2 G3(2) COMPUTER HARDWARE (コンピュータ ハードウェア技術)															Test	2. Structure & function of Computer 2-1. Concept & Structure of Computer 2-2. Main Memory Units 2-3. Arithmetic Logical Unit 2-4. Control Logical Units 2-5. I/O Devices 2-6. Computer Operation by Machine Lang.																							
CT-3 G3(2) COMPUTER PERIPHERALS (周辺装置 技術)															Test	2. I/O Units & Maintenance 2-1. I/O Units and Control key board card reader printer light-pen display mouse communication unit 2. CPU & Peripheral Devices 1-1. Control & Input/Output Data 1-2. Bus Line & Signal 1-3. Interfaces & Channels 1-4. Control by Interrupt Functions																							
CT-4 G3(2) COMPUTER SOFTWARE & DIAGNOSIS (ソフトウェア 診断技術)															Test	2. Programming 2-1. Programming by Machine Language 2. Systems of Computer Software 1-1. Hierarchy of Software 1-2. Operation System																							
CT-5	1. Practice of Computer Hardware 1-1. Basic Circuit of Computer Unit 1-2. Confirmation of Computer Functions 1-3. Handling and Operation Check of Computer Systems 1-4. Computer Systems & Computer Networks																																						
CT-6 G3(3)	2. Practice of Computer Peripheral Units 2-1. Practice of I/O Devices 2-2. Practice of Auxiliary Memory Devices																																						
CT-7	3. Practice of computer Software & Diagnosis Technique 3-1. Programming Practice by Assembling Language & C Language 3-2. File Management and Maintenance 3-2. Diagnosis Practice of Computer																																						
															Test	3. Trouble Diagnosis on Computer 3-1. Trouble Shooting (logic circuits) 3-2. .. (hardware systems) 3-3. .. (I/O peripherals) 3-4. .. (System by soft)																							

The many courses of the project study listed below can be choiced.

Project Study  
Students can practice and experiment one or more courses during the year. One group of the course should consist of three students.

- AV-1  
Project Study : Audio & Video  
(5 credits) 3rd Year  
140 hours 28 weeks
1. Assembling and adjustment of AM/FM receiver sets.
  2. Assembling and adjustment of 30W audio stereo power amplifiers.
  3. Assembling and adjustment of 7m superheterodyne receivers and multiplexer amplifiers.
  4. Assembling and adjustment of color TV sets.
  5. Handling of video camera and assembling of monitor TV sets.
  6. Production of video programs and adjustment and recording technology of VTR(video tape recorder) video editing technology.
  7. Production of video programs for teaching materials and video editing technology.
  8. Adjustment and measurement of CCTV technology and repeater systems.
  9. Adjustment and measurement of microwave repeater.
  10. Adjustment and measurement of new audio system. ( CD, DAT )

IE-1  
3rd Grade 5 Credits  
[ 140 H ] [ 28 W ]

[PROJECT STUDY] PROJECT STUDY

1. Assembling of a Microrobot with a Microprocessor  
assembling, adjusting, programming, and running test
2. Assembling and Experiment of a Multiplex Instrumentation System by use of Microcomputer measurements and controls of temperature, humidity, control of valves and motors, data procedures.
3. Control Practice of a Mechanical Robot Arm  
practice of operating system, control of actuators  
control of AC, DC motors and pulse motors
4. Practice of Sequence Control Systems  
programming and control for elevator simulator  
experiment of 3-dimensional control model
5. Practice of Feedback Control Systems  
propagation function, bode diagram, computer control  
measuring and control of temperature in chamber,  
motor control by inverter, programmed control, data processing
7. Practice of Ultrasonic Applications  
measuring of sound velocity, ultrasonic instrumentation, ultrasonic processing.
8. Practice of High Frequency Heating  
power supply for HF heating system, HF oscillator, inverter circuits,  
practices of inductive heating and dielectric heating
9. Assemble and practice of Power Electronics  
design and assemble of power electronics devices(thyristor, GTR)  
measurement/control by it, inverter power conversion(PWM)

Industrial Electronics Department has three main frames of the aim, that is, measurement/control, power electronics and high frequency application. In Project Study course students have to be announced previously about the concept of the Project Study what they study in a following year. Nine advisers will be in charge of guidance; a chief teacher, five teachers and three practical teachers. Nine themes of Project Study are arranged here. Students may choose a theme from here. About three or four students had better to be provided with at one theme. Students must plan to study or investigate about the theme chosen by themselves during a year. It includes academic investigation, inventive trial, design and assembling of new device, developing a new measuring method, developing a control technique of machine, etc.

I would like you to plan the project study training about themes 1~9 as above mentioned. It will be difficult to study these 6 through 8 in technical high school or college now, because of lack of nowadays curriculum in school. Under the consideration of undesired order of equipment, company's training may be difficult to be down in this period. Therefore one of themes 1~5 and 9 should be done in a month during coming nine months.

Training plan of the Saudi-Arabian first trainee's group in Japan should be concentrated in special technology training if possible.

93/10/25

年間授業 . JSK

AC-1  
[ Project Study ]

Third Grade  
[ 140 H ]

5 Credits  
[ 28 W ]

1-1 Preface

The feature of this subject is the Active Learning Form which is independently developed by students under the guidance and advice of teachers. (Anti-Passive Learning Form). That is, under the suitable guidance and advice of teachers, all students establish their own studying theme relating to industry independently and develop their Project Study based on annual plan.

1-2 Objectives

To educate students their independent studying attitude, applicable abilities and creative power, and make an attempt to accomplish following items.

1. To develop and synthesize their knowledge and skill level.
2. To ask them to develop the abilities of solving problems scientifically.
3. To develop their volunteering creative ideas and attitude.

TC-1

[PROJECT STUDY] TELECOMMUNICATION

3rd Grade 5 Credits  
[ 140 H ] [ 28 W ]

1 Design and production radio receiver

1-1 Design and production of AM-transmitter(10 Watt)

1-2 Design and production of FM-transmitter(10 Watt)

1-3 Design and production of AM receiver

1-4 Design and production of FM receiver

1-5 Design and Production of Stereo system

2 Study of transmitter

2-1 Practice of optical transmitter

2-2 Practice of micro wave transmitter

2-3 Practice of digital transmitters

3 Study of communication system

3-1 Practice of carrier frequency communication

3-2 Practice of multiplex communication

3-3 Practice of satellite communication

3-4 Practice of computer communications

4 Practice of electronic exchanger

5 Practice of facsimile

6 Practice of sound recorder system

7 Practice of antenna

## PROJECT STUDY

1. Study on I/O Devices and Transmission Mechanism of Power
  - 1-1 Study on power transmission mechanisms
  - 1-2 Separation and reconstruction of I/O devices
  - 1-3 Operation of I/O devices
2. Assembling of Application Units with Electronic Circuits
  - 2-1 Assembling of single function units as follows
    - (1) Power regulated supply unit
    - (2) Application unit used with IC digital circuits
    - (3) Signal receivers & drivers with some kinds of sensors & actuators
    - (4) Amplifier & comparator used with analog ICs
    - (5) A/D and D/A converters and application of them
    - (6) One-board computer and its application
    - (7) P-ROM, writer and eraser
  - 2-2 Assembling and utilization of complex function units as follows
    - (1) RAM recorder
    - (2) I/O interface units
    - (3) Interface units for robot control
    - (4) MODEM units for data(computer) communications
3. Study on Maintenance & Management of Computer
  - 3-1 Operation checks of min-computer
  - 3-2 Operation checks of medium size computer by use of software for checks & diagnosis
  - 3-3 Management of computer rooms
4. Software Development of Application Programs
 

\* One or more students should take care of computer rooms in turn dairy or weekly
5. Digital circuit designing by mean of CAD system
6. Design and assemble of a micro mouse with a microprocessor
7. Design and assembling of a multifunction robot
8. Research and development of a micro assembler
9. Design and assemble of a datacommunication system by optical fibre
10. Software Design and development for minicomputer
11. Hardware Design and development



4 供与機材リスト

List of Equipments donated by Japan side

1994/1/23

NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
1	Da201	1	DC Volt/Current Calibrator	15	YOKOGAWA	2422	
2	Da202	1	DC Volt/Current Calibrator	15	YOKOGAWA	2422	
3	Da205	1	Oscilloscop	15	KEWOOD	CS-1022	
4	Da205	2	R-C Oscillator	15	KIKUSUI	ORC11	
5	Da205	3	Digital Multi Meter	15	IRATSU	VOAC7411	
6	Da205	4	Electronic Voltmeter	15	NATIONAL	VP-9827A	
7	Da205	5	DC Voltmeter	15	SHIMADZU	MPM107-475	1/3/10/30V
8	Da205	6	DC Ammeter	15	SHIMADZU	MPM107-464	1/3/10/30A
9	Da205	7	GAUSS Meter	15	UCEIDA	KG-3	
10	Da205	8	LDX Meter	15	UCEIDA	IN-2U	
11	Da205	9	DC Power Supply Trainer	15	SHIMADZU	EPD-5	
12	Da205	10	Sem-Conductor Trainer	15	SHIMADZU	KSC-3	
13	Da205	11	Working desk	15	KOKUYO		
14	Da205	12	Working Chair for Students	15	KOKUYO		
15	Da205	13	Cabinet	4	ITOKI	ET-3180N/2180N/A403	
16	Da205	14	Teacher's Desk	1	OKAWURA	DB14LF	
17	Da205	15	Teacher's Chair	1	OKAWURA	2745ZW	
18	Da205	16	Tool Set	15	BOZAN	S-18	
19	Da206	1	Oscilloscop	15	KEWOOD	CS-1022	
20	Da206	2	R-C Oscillator	15	KIKUSUI	ORC11	
21	Da206	3	Digital Multi Meter	15	IRATSU	VOAC7411	
22	Da206	4	Electronic Voltmeter	15	NATIONAL	VP-9827A	
23	Da206	5	DC Voltmeter	15	SHIMADZU	MPM107-475	1/3/10/30 V
24	Da206	6	DC Ammeter	15	SHIMADZU	MPM107-464	1/3/10/30 A
25	Da206	9	DC Power Supply Trainer	15	SHIMADZU	EPD-5	
26	Da206	11	Working desk	15	KOKUYO		
27	Da206	12	Working Chair for Students	15	kokuyo		
28	Da206	13	Cabinet	4	ITOKI	ET-3180N/2180N/A403	
29	Da206	14	Teacher's Desk	1	OKAWURA	DB14LF	
30	Da206	15	Teacher's Chair	1	OKAWURA	2745ZW	
31	Da206	16	Tool Set	15	BOZAN	S-18	

NO.	ROOM	ITEK	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
32	Da209	1	Drilling Machine	5	SIRA	ERTG-340	
33	Da209	2	Field High Tester	15	HIOKI	3124	
34	Da209	3	Tool Set	15	BOZAN	S-22	
35	Da209	4	Cordless Driver - Drill	15	HITACHI	D-10DAI	
36	Da209	5	PCB Vice	15	BOZAN	E-91	
37	Da209	6	Soldering Station	15	TAIYO ELECTRON	PX-1	
38	Da209	7	Working Desk	15	KOKUYO	DB2188L	
39	Da209	8	Working Chair for Students	15	KOKUYO	CR-G300	
40	Da209	9	Cabinet	4	ITOKI	BT-3180N/2180N/A403	
41	Da209	10	Teacher's Desk	1	OKAMURA	DB14LF	
42	Da209	11	Teacher's Chair	1	OKAMURA	27445ZW	
43	Da210	1	Drilling Machine	5	KIRA	ERTG-340	
44	Da210	2	Field High Tester	15	HIOKI	3124	
45	Da210	3	Tool Set	15	BOZAN	S-22	
46	Da210	4	Cordless Driver - Drill	15	HITACHI	D-10DAI	
47	Da210	5	PCB Vice	15	BOZAN	E-91	
48	Da210	6	Soldering Station	15	TAIYO ELECTRON	PX-1	
49	Da210	7	Working Desk	15	KOKUYO	DB2188L	
50	Da210	8	Working Chair for Students	15	KOKUYO	CR-G300	
51	Da210	9	Cabinet	4	ITOKI	BT-3180N/2180N/A403	
52	Da210	10	Teacher's Desk	1	OKAMURA	DB14LF	
53	Da210	11	Teacher's Chair	1	OKAMURA	27445ZW	
54	Do105	1	Drilling Machine	4	KIRA	ERTG-340	
55	Do106	1	Drilling Machine	4	KIRA	ERTG-340	
56	Db201	1	AW/PW/IF Amp. Static Charact Trainer	15	FUJI DAIKAWICS	FT-200A/B/C/D	Accessory
57	Db201	2	OSC. CIR. Trainer	15	FUJI DAIKAWICS	FT-500A/B/C/D	Accessory
58	Db201	3	OP Amp. Trainer	15	FUJI DAIKAWICS	FT-510A/B/C/D	Accessory
59	Db201	4	DC Power Supply Trainig Set	15	SEIMAZU	IPD-5	
60	Db201	5	Oscilloscope	15	KENWOOD	CS-1022	
61	Db201	6	DC Voltmeter 1/3/10/30 [v]	15	SEIMAZU	WPX	
62	Db201	7	DC Ammeter 1/3/10/30 [A]	15	SEIMAZU	WPX	

NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
63	Db201	8	AC Voltmeter 0.5-150mV	15	kikusui	ABV-25	
64	Db201	9	DC Millivolt Ammeter	15	KIKUSUI	115A	1.5mV-300V/0.15mA-50mA
65	Db201	10	Working Desk	15	KOKUYO	DB2188L	
66	Db201	11	Working Chair for Students	15	KOKUYO	CR-6300	
67	Db201	12	Cabinet	4	ITOKI	BT3180V/2180X/A403	
68	Db201	13	Teacher's Desk	1	OKAWURA	DB142F	
69	Db201	14	Teacher's Chair	1	OKAWURA	2745ZF	
70	Db202	1	Sequence Control Trainer	15	FUJI DAINAMICS	FT-700A/B/C/D	FT10+Accessaly
71	Db202	2	Pulse Circuit Traior	15	FUJI DAINAMICS	FT-530A/B/C/D	
72	Db202	3	Elevator Model	15	FUJI DAINAMICS	FT-702	
73	Db202	4	Lack	15	FUJI DAINAMICS		the other 15 in Db208
74	Db202	5	Digital Circuit Trainer	15	FUJI DAINAMICS	FT-360A/B/C/D/S/z	Panel(A/B)+Accessory
75	Db202	6	DC Power Supply	15	KIKUSUI	PAB18-2.50U	0-18v 2.5A
76	Db202	7	Oscilloscope	15	KENWOOD	CS-1022	
77	Db202	8	Digital High Tester	15	BIOKI	3233	
78	Db202	9	DC Millivolt Ammeter	15	KIKUSUI	115A	1.5mV-300V/0.15mA-50mA
79	Db202	10	Working Desk	15	KOKUYO	DB2188L	
80	Db202	11	Working Chair for Students	15	KOKUYO	CR-6300	
81	Db202	12	Cabinet	4	ITOKI	BT3180V/2180X/A403	
82	Db202	13	Teacher's Desk	1	OKAWURA	DB142F	
83	Db202	14	Teacher's Chair	1	OKAWURA	2745ZF	
84	Dc201	1	Electronic Instrument Testing System	15	PEACE	PET-11D	Main Frame/Front/Upper/Back Panel
85	Dc201		Setting For PET-11D (1) AF Oscillator		NATIONAL	VP-7421A	
86	Dc201		Setting For PET-11D (2) Multimeter		BIOKI	3233	
87	Dc201		Setting For PET-11D (3) Frequency Counter		ADVANTEST	TR5423	
88	Dc201		Setting For PET-11D (4) Oscilloscop		NATIONAL	VP-5512A	Accessory
89	Dc201		Setting For PET-11D (5) Power Supply		TAKASAGO	GPT322	
90	Dc201	2	Digital Dip Meter	15	MIYA MusenIenkyu	DVC-50	
91	Dc201	3	LCR Bridge	15	LEADER	LCR-740	AC Adapter LPS-169A
92	Dc201	4	Millivolt Ammeter	15	KIKUSUI	MODEL 115A	
93	Dc201	5	PCB Vise	15	BOZAN	E-91	

NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
94	Dc201	6	Soldering Station	15	TAIYO	PX-1	
95	Dc201	7	Working Desk	15	CEBU Electron	dacobas	
96	Dc201	8	Working Chair for Students	15	KOKUYO	CR-G300	
97	Dc201	9	Cabinet	4	ITOEI	BT-3180H/2180N/A-403	
98	Dc201	10	Teacher's Desk	1	OKAYURA	DB142F	
99	Dc201	11	Teacher's Chair	1	OKAYURA	27452W	
100	Dc203	1	Electronic Instrument Testing System	15	PEACE	PET-11D	Main Frame/Front/Upper/Back Panel
101	Dc203		Setting For PET-11D (1) AF Oscillator		NATIONAL	VP-7421A	
102	Dc203		Setting For PET-11D (2) Multimeter		EIOEI	3233	
103	Dc203		Setting For PET-11D (3) Frequency Counter		ADVANTEST	TR5A23	
104	Dc203		Setting For PET-11D (4) Oscilloscop		NATIONAL	VP-5512A	Accessary
105	Dc203		Setting For PET-11D (5) Power Supply		TAKASAGO	GPT322	
106	Dc203	2	Digital Dip Meter	15	MIYA MusenKenkyu	DMC-50	
107	Dc203	3	LCR Bridge	15	LEADER	LCR-740	AC Adapter LPS-168A
108	Dc203	4	Millivolt Ammeter	15	KIRCSUI	MODEL 115A	
109	Dc203	5	PCB Vise	15	BOZAN	E-91	
110	Dc203	6	Soldering Station	15	TAIYO	PX-1	
111	Dc203	7	Working Desk	15	CEBU Electron	dacobas	
112	Dc203	8	Working Chair for Students	15	KOKUYO	CR-G300	
113	Dc203	9	Cabinet	4	ITOEI	BT-3180H/2180N/A-403	
114	Dc203	10	Teacher's Desk	1	OKAYURA	DB142F	
115	Dc203	11	Teacher's Chair	1	OKAYURA	27452W	
116	Dc202	1	Etching Set	10	SUNRAYAT	ES-30	
117	Dc202	2	Hand Cutter	10	SUNRAYAT	PC-300	
118	Dc202	3	Light BOX	5	SUNRAYAT	BOX-W10	
119	Dc202	4	Table Planting Device	20	SUNRAYAT	SK-255	
120	Dc202	5	Mini Drill	10	SUNRAYAT	AC-D7	
121	Dc202	6	Mini Stand	10	SUNRAYAT	ST-6	
122	Dc202	7	Working Desk	10	UCHIDA	G-3	
123	Dc202	8	Working Chair for Students	15	KOKUYO	CR-G300	
124	Dc202	9	Teacher's Desk	1	OKAYURA	DB142F	

NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
125	Dc202	10	Trasher's Chiar	1	ORAMURA	2745ZW	
126	Dc202	11	Etching unit	1	PRINT-DENSEI	ME-3J	
127	Dc202	12	Dryer	1	PRINT-DENSEI	NR-1	
128	Dc202	13	Dip coater	1	PRINT-DENSEI	MDP-2	
129	Dc202	14	Linsing sink	1	PRINT-DENSEI	WP-1001	
130	Dd207	1	PB DATA SETTER	8	JADEC	B-2	
131	Dd207	2	8-BIT SHIFT REGISTER	3	JADEC	B-4	
132	Dd207	3	8-BIT SHIFT REGISTER	2	JADEC	B-5	
133	Dd207	4	256-BYTE MEMORY	1	JADEC	B-8	
134	Dd207	5	TRI COUNTER	4	JADEC	B-11	
135	Dd207	6	AND GATE	2	JADEC	B-13	
136	Dd207	7	DUAL 2-INPUT AND GATE	4	JADEC	B-14	
137	Dd207	8	DUAL 2-INPUT AND WITH GND	1	JADEC	B-15	
138	Dd207	9	QUAD 2-INPUT AND GATE	4	JADEC	B-16	
139	Dd207	10	DUAL 4-INPUT AND GATE	4	JADEC	B-17	
140	Dd207	11	2-INPUT OR GATE	2	JADEC	B-19	
141	Dd207	12	DUAL 2-INPUT OR GATE	2	JADEC	B-20	
142	Dd207	13	QUAD 2-INPUT OR GATE	2	JADEC	B-21	
143	Dd207	14	DUAL 4-INPUT OR GATE	4	JADEC	B-22	
144	Dd207	15	8-INPUT OR GATE	1	JADEC	B-23	
145	Dd207	16	NOT GATE	3	JADEC	B-24	
146	Dd207	17	DUAL NOT GATE	3	JADEC	B-25	
147	Dd207	18	8-INPUT OR GATE	1	JADEC	B-27	
148	Dd207	19	MANUAL PULSE GENERATOR	3	JADEC	B-28	
149	Dd207	20	3 TO 8 DECODER	4	JADEC	B-31	
150	Dd207	21	ARITHMETIC LOGIC UNITS	1	JADEC	B-37	
151	Dd207	22	PHOTO COUPLER OUTPUT INTERFACE	1	JADEC	B-38	
152	Dd207	23	QUAD PHOTO COUPLER OUTPUT INTERFACE	2	JADEC	B-39	
153	Dd207	24	RELAY OUTPUT INTERFACE	1	JADEC	B-40	
154	Dd207	25	QUAD RELAY OUTPUT INTERFACE	2	JADEC	B-41	
155	Dd207	26	DUAL SSR OUTPUT INTERFACE	1	JADEC	B-42	

NO.	ROOM	ITER	NAME	Q ty	MANUFACTURE	TYPE	REMARK
156	Dd207	27	DC12V CONTACT INTERFACE	1	JAEDEC	B-43	
157	Dd207	28	DC12V LAMP	1	JAEDEC	B-45	
158	Dd207	29	DEAL DC12V LAMP	1	JAEDEC	B-46	
159	Dd207	30	TRI DC12V LAMP	2	JAEDEC	B-47	
160	Dd207	31	DC5V POWER SUPPLY TERMINAL	1	JAEDEC	B-48	
161	Dd207	32	HEXA DECIMAL DISPLAY	1	JAEDEC	B-49	
162	Dd207	33	PULSE SWITCH	1	JAEDEC	B-50	
163	Dd207	34	TRI PULSE SWITCH	1	JAEDEC	B-51	
164	Dd207	35	OCTAL SNAP SWITCH	1	JAEDEC	B-52	
165	Dd207	36	VERTICAL BRANTCH	2	JAEDEC	B-53	
166	Dd207	37	HORIZONTAL BRANTCH	2	JAEDEC	B-54	
167	Dd207	38	PARALLEL-IN SERIAL-OUT REGISTER	1	JAEDEC	B-101	
168	Dd207	39	VARIABLE AUTOMATIC PULSE GENERATOR	1	JAEDEC	B-103	
169	Dd207	40	LED SIGNAL	2	JAEDEC	B-104	
170	Dd207	41	ONE CHARACTER DISPLAY	1	JAEDEC	B-105	
171	Dd207	42	OCTAL DATA SETTER	3	JAEDEC	B-3	
172	Dd207	43	8-BYTE MEMORY	1	JAEDEC	B-9	
173	Dd207	44	PRESET COUNTER	2	JAEDEC	B-12	
174	Dd207	45	8-INPUT AND GATE	1	JAEDEC	B-18	
175	Dd207	46	OCTAL 2-INPUT EX-NOR GATE	1	JAEDEC	B-26	
176	Dd207	47	1Kz AUTOMATIC PULSE GENERATOR	4	JAEDEC	B-29	
177	Dd207	48	500Hz AUTOMATIC PULSE GENERATOR	1	JAEDEC	B-30	
178	Dd207	49	PIN BOARD DECODER	1	JAEDEC	B-32	
179	Dd207	50	INSTRUCTION DECODER	1	JAEDEC	B-33	
180	Dd207	51	PIN BOARD ENCODER	2	JAEDEC	B-34	
181	Dd207	52	DEAL AC100V CONTACT INPUT INTERFACE	3	JAEDEC	B-44	
182	Dd207	53	CPU SIMULATOR	1	JAEDEC	B-100	
183	Dd207	54	ELECTRO-MAGNETIC VALVE	2	JAEDEC	D-3	
184	Dd207	55	AIR TERMINAL	1	JAEDEC	D-8	
185	Dd207	56	DC12V MOTOR	1	JAEDEC	D-11	
186	Dd207	57	AC100V MOTOR	1	JAEDEC	D-12	

NO.	ROOM	ITEK	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
187	Dd207	58	DC5V POWER SUPPLY	1	JADEC	3-1	
188	Dd207	59	DC12V POWER SUPPLY	1	JADEC	3-2	
189	Dd207	60	DC VARIABLE POWER SUPPLY	1	JADEC	3-3	
190	Dd207	61	B-32' S PINS	48	JADEC	B-32 S	
191	Dd207	62	B-33' S PINS	32	JADEC	B-33 S	
192	Dd207	63	B-34' S PINS	64	JADEC	B-34 S	
193	Dd207	64	CYLINDER (UPPER)	1	JADEC	D-1	
194	Dd207	65	CYLINDER (LOWER)	1	JADEC	D-2	
195	Dd207	66	LIMIT SWITCH (FRONT)	2	JADEC	D-4	
196	Dd207	67	LIMIT SWITCH (BACK)	2	JADEC	D-5	
197	Dd207	68	LIMIT SWITCH (SLOPE)	1	JADEC	D-6	
198	Dd207	69	FOOT SWITCH	1	JADEC	D-7	
199	Dd207	70	AIR PIPE	6	JADEC	D-9	
200	Dd207	71	BAGGAGE	6	JADEC	D-10	
201	Dd207	72	TRAFFIC SIGNAL LAMP STAND	1	JADEC	D-13	
202	Dd207	73	FLOPPY DISK DRIVE (MODEL)	1	JADEC	D-100	
203	Dd207	74	FLOPPY DISK (MODEL)	1	JADEC	D-101	
204	Dd207	75	DC5V CONNECTOR BOX	1	JADEC	F-1	
205	Dd207	76	DC12V CONNECTOR BOX	1	JADEC	F-2	
206	Dd207	77	AC100V CONNECTOR BOX	1	JADEC	F-3	
207	Dd207	78	DC VARIABLE CONNECTOR BOX	1	JADEC	F-4	
208	Dd207	79	SINGLE BOARD MICRO COMPUTER	1	JADEC	A-1	
209	Dd207	80	2-PB DATA SELECTOR	4	JADEC	B-1	
210	Dd207	81	SHIFT REGISTER	1	JADEC	B-6	
211	Dd207	82	COUNTER	1	JADEC	B-10	
212	Dd207	83	PERSONAL COMPUTER I/O INTERFACE	1	JADEC	B-55	
213	Dd207	84	BUS CONNECTOR BOARD	1	JADEC	B-56S	
214	Dd207	85	CHARACTOR ROM	1	JADEC	B-102	
215	Dd207	86	ELECTRO-MAGNETIC VALVE (MODEL)	1	JADEC	D-14	
216	Dd207	87	DC6V RELAY(IN D-30 SAMPLE CASE)	1	JADEC	D-21	
217	Dd207	88	DC24V RELAY(IN D-30 SAMPLE CASE)	1	JADEC	D-22	

NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
218	Dd207	89	1A100V RELAY (IN D-30 SAMPLE CASE)	1	JADEC	D-23	
219	Dd207	90	1SSR (IN D-30 SAMPLE CASE)	1	JADEC	D-24	
220	Dd207	91	1C (PULSE GENERATOR) (IN D-30 SAMPLE CASE)	1	JADEC	D-25	
221	Dd207	92	1C (RAW) (IN D-30 SAMPLE CASE)	1	JADEC	D-27	
222	Dd207	93	1C (EPROM) (IN D-30 SAMPLE CASE)	1	JADEC	D-28	
223	Dd207	94	1 SAMPLE CASE	1	JADEC	D-30	
224	Dd207	95	1 CIRCUIT TESTER	2	JADEC	2-1	
225	Dd207	96	1 DC AMMETER	1	JADEC	2-2	
226	Dd207	97	1 DC VOLTMETER	1	JADEC	2-5	
227	Dd207	98	1 AIR COMPRESSOR	1	KISO POWER TOOL	T3505	
228	Dd207	99	1 MICRO SCOPE (IN D-30 SAMPLE CASE)	1	WATSUBI	FF393	
229	Dd207	100	1 LAMP	2	JADEC	C-1	
230	Dd207	101	1 PUSH BOTTON SWITCE	2	JADEC	C-3	
231	Dd207	102	1 KNIFE SWITCE	1	JADEC	C-5	
232	Dd207	103	1 RELAY	1	JADEC	C-5	
233	Dd207	104	1 RELAY (NORMAL)	1	JADEC	C-7	
234	Dd207	105	1 RELAY (REVERSE)	1	JADEC	C-8	
235	Dd207	106	1 DC3V RELAY	1	JADEC	C-9	
236	Dd207	107	1 RESISTOR 330Ω	3	JADEC	C-11	
237	Dd207	108	1 RESISTOR 1kΩ	2	JADEC	C-14	
238	Dd207	109	1 RESISTOR 2kΩ	2	JADEC	C-15	
239	Dd207	110	1 RESISTOR 10kΩ	5	JADEC	C-18	
240	Dd207	111	1 RESISTOR 100kΩ	1	JADEC	C-19	
241	Dd207	112	1 CAPACITOR 100μF	2	JADEC	C-20	
242	Dd207	113	1 CAPACITOR 470μF	2	JADEC	C-21	
243	Dd207	114	1 CAPACITOR 3300μF	2	JADEC	C-22	
244	Dd207	115	1 CAPACITOR 4700μF	2	JADEC	C-23	
245	Dd207	116	1 DIODE LAMP	2	JADEC	C-25	
246	Dd207	117	1 TRANSISTOR	2	JADEC	C-26	
247	Dd207	118	1 PHOTO COUPLER	1	JADEC	C-28	
248	Dd207	119	1 PULSE GENERATOR (BY RELAY)	1	JADEC	C-31	



NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
249	Dd207	120	PULSE GENERATOR (BY TR)	1	JADEC	C-32	
250	Dd207	121	PULSE COUNTER (BY RELAY)	1	JADEC	C-33	
251	Dd207	122	REVERSE RELAY	1	JADEC	C-100	
252	Dd207	123	LIMIT SWITCH (MODEL)	1	JADEC	D-15	
253	Dd207	124	WORK BOARD (FOR C BLOCK)	1	JADEC	E-1	
254	Dd207	125	WORK BOARD (FOR B BLOCK)	3	JADEC	E-2	
255	Dd207	126	AC CABLE	3	JADEC	G-1	
256	Dd207	127	WIRE WITH BANANA PLUGS 20cm LONG	20	JADEC	G-2	
257	Dd207	128	WIRE WITH BANANA PLUGS 40cm LONG	20	JADEC	G-3	
258	Dd207	129	WIRE WITH BANANA PLUGS 160cm LONG	16	JADEC	G-4	
259	Dd207	130	WIRE WITH CLIPS 20cm LONG	20	JADEC	G-7	
260	Dd207	131	WIRE WITH CLIPS 40cm LONG	10	JADEC	G-8	
261	Dd207	132	WIRE WITH PIN PLUGS 15cm LONG	100	JADEC	G-9	
262	Dd207	133	WIRE WITH PIN PLUGS 30cm LONG	100	JADEC	G-10	
263	Dd207	134	WIRE WITH PIN PLUGS 60cm LONG	50	JADEC	G-11	
264	Dd207	135	WIRE WITH PIN PLUGS 100cm LONG	30	JADEC	G-12	
265	Dd207	136	PIN PLUG	10	JADEC	G-16	
266	Dd207	137	BARANCE PLUG	10	JADEC	G-17	
267	Dd207	138	FLAT CABLE (TYPE RC/AT)	1	JADEC	G-18S	
268	Dd207	139	GND WIRE	3	JADEC	G-19	
269	Dd207	140	CABLE WITH 8PIN PLUG	10	JADEC	G-20	
270	Dd207	141	FUSE (2A)	4	JADEC	5-1	
271	Dd207	142	FUSE (5A)	4	JADEC	5-2	
272	Dd207	143	FUSE (10A)	2	JADEC	5-3	
273	Dd207	144	DIODE LAMP	2	JADEC	5-4	
274	Dd207	145	PHOTO COUPLER	1	JADEC	5-5	
275	Dd207	146	TEXT BOOK IBM PC/AT(ENGLISH)				
276	Dd207	147	TEXT BOOK IBM PC/AT(JAPANESE)	3	JADEC		
277	Dd207	148	CABINET	2	PLUSE		
278	Dd207	149	WORKING DESK	12	PLUSE		
279	Dd207	150	STUDENTS CHAIR	3			

NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
280	Da207	151	TEACHERS DESK	1			
281	Da207	152	TEACHERS CHAIR	1			
282	Da207	153	Personal computer system	12	Pro side	P286D-DISK	
283	Da207	154	Display	14	Mitsuba	710a	
284	Da207	155	Dot matrix printer	14	Seikosha	SP-2000	
285	Da208	1	POWER LINE UNIT				
286	Da208		Cabinet Panel	8		BQ8T306F	
287	Da208		Dimmer Switch for Max.500W Incandescant Lamp	6		NQ888(No20361K)	
288	Da208	2	SECURITY TELEPHONE UNIT				
289	Da208		Facsimile Simulator	6		MS-02	
290	Da208		Security Home Telephone Type 103 (10F)	6		WQ3120W	
291	Da208		Door Phone W/Indication Lamp	6		EJ512	
292	Da208		Door Phone W/Out Indication Lamp	6		EJ502	
293	Da208		Moduler Jack of Teldooray Type 6 Position 4 Co nfact	6		WNT1412	
294	Da208		Telephone	6		VE-P25-K	
295	Da208	3	ALARM UNIT				
296	Da208		Alarm Unit for Security Home Telephone type 10 3	6		WQ85101	
297	Da208		Type 6 Round Red AlarmBell	6		EA464	
298	Da208		Head for Gas Leak Sensor & Base for Gas Leak S ensor	6		SE13832 & SE5900	
299	Da208		Head & Base for Rate of Rise Heat Detector Cla ss-2	6		BY42205K & BY4910	
300	Da208		High-Sensitivity Burgler Alarm Small Door Switc h	6		EK3591	
301	Da208	4	MONITOR TV UNIT				
302	Da208		Monitor TV Unit for Security Telephone Type 10 3	6		FQNS421	AC100Y
303	Da208		2-Tire Door Phone Unit W/Camera	6		EJ234Y	
304	Da208		Moduler Jack of Teldooray Type 6 Position 4 Co	6		WNT1412	

NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
			stact				
305	Da208	5	ELECTRICAL KEY CONTROL UNIT				
306	Da208		Security Home Telephone Type 103	6		WQ6412	AC100V
307	Da208		Secret Switch	6		EX382B	
308	Da208		Door Phone	6		EJ1121B	
309	Da208		Mounting Frame for the Above	6		EJ6712B	
310	Da208		Electrical Key	6		EX3711	
311	Da208		Push Button Switch for Indoor Use	12		EX3502	
312	Da208		Modern Plate 3 Device	12		WV6003W	
313	Da208	6	TELECONTROL UNIT				
314	Da208		Telemonitor Unit for Security HOME Telephone	6		WQ3731	AC100V10W
315	Da208		Power Source Unit for Telecin Telemonitor Unit	6		WQ3710	
316	Da208		20A Full-POWER Relay	18		WR6161	(WQ6161-S)
317	Da208		Home Control Relay for Telecon Monitor	18		WQT3705	
318	Da208		Down Transformer for Electrical Key Control Unit	18		WR2301	WR3
			dit				
319	Da208	7	HOME ELECTRONIC WORK BENCH				
320	Da208		Home Electronic Work Bench	30			Special Designed
321	Da208		Home Electronic Cabinet	30		T1001127	Built-in Down Transformer [27/100V-1 kVA
322	Da208		Home Electronic Cabinet	30			
323	Da205	1	IBM PS-2 SYSTEM FOR STUDENTS	15	IBM		
324	Da205		Computer	1	IBM	PS-2 M-30-F21	Co-Pro. 80287/0.5MB Memory Module/Ta
			Key Board		IBM	8530	litenRing Adapter
325	Da205		Color Display 12		IBM		
327	Da205		Mouse		IBM		
328	Da205		Printer		IBM	5204	
329	Da205	2	IBM PS-2 SYSTEM FOR TEACHER	1	IBM		
330	Da205		Computer		IBM	PS-2 M31-F31	Co-Pro. 80387/2MB Memory/TalkenRing Adapter

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NO.	ROOM	ITEM	NAME	QTY	MANUFACTURE	TYPE	REMARK
331	Dd205	Key Board		1	IBM	8530	
332	Dd205	Color Display 12			IBM		
333	Dd205	Mouse			IBM		
334	Dd205	Printer			IBM	5204	
335	Dd205	3 IBM PS-2 Lan Manager System		1	IBM		
336	Dd205	Computer			IBM	PS-2 M70-121	2MB+2 Memory/CP-1B Interface/Multi Station Access Unit#3
337	Dd205	Key Board			IBM	8570	
338	Dd205	Color Display 12			IBM	8513	
339	Dd205	Prioter			EP	Series3	
340	Dd205	Plotter			EP	7550A	
341	Dd205	4 Working Desk for Students		15		1000 E	
342	Dd205	5 Working Desk for Teacher		2		OA Table 1000 E	
343	Dd205	6 Working Desk for Plotter		1		Plotter Table	
344	Dd205	7 Working Chair for Students		15		OA Chair 3683271	
345	Dd205	8 Working Chair		2		OA Chair 3683291	
346	Dd205	9 Uninterrupt Power Supply for Studetbs		15		TUPS-500E	500W
347	Dd205	10 Uninterrupt Power Supply for Teacher		2		TUPS-750E	750W
348	Dd205	11 Uninterrupt Power Supply for Lan		1		TUPS-1000E	
349	Dd205	12 Tranceformer		1		Input220V/Output100v 15kva	
350	Dd205	13 Soft Ware for Students		15			IBMDSV4.0/CZ./QBASIC/WORDPERFECTY 5.1/123R2.2/DBASE4/XACROASSEY.2/FO RTRAS2
351	Dd205	14 Soft Ware for Teacher		1			IBMDSV4.0/CZ./QBASIC/WORDPERFECTY 5.1/123R2.2/DBASE4/XACROASSEY.2/FO RTRAS2/COBOL2/BASIC COM./PASCAL CO M./AUTOCAD2
352	Dd205	15 NET WORK PROGRAM		1			Novell Netware V2.15
353	Dd205	16 PC Lan suport program		16			
354	Dd205	17 free access floor		1		Novaflex 500s	ABRETY
355	Dd206	1 IBM PS-2 SYSTEM FOR STUDENTS		15	IBM		

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NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
356	Dd206		Computer		"	PS-2 M-30-F21	Co-Pro. 80287/0. 5MB Memory Module/Ta
357	Dd206		Key Board		"	8530	1kenRing Adddapter
358	Dd206		Color Display 12		"		
359	Dd206		Mouse		"		
360	Dd206		Printer		"	5204	
361	Dd206	2	IBM PS-2 SYSTEM FOR TEACHER	1	IBM		
362	Dd206		Computer		"	PS-2 M31-F31	Co-Pro. 80387/2MB Memory/TalkenRing Adddapter
363	Dd206		Key Board		"	8530	
364	Dd206		Color Display 12		"		
365	Dd206		Mouse		"		
366	Dd206		Printer		"	5204	
367	Dd206	3	IBM PS-2 Lan Manager System	1	IBM		
368	Dd206		Computer		"	PS-2 M70-121	2MB*2 Memory/GP-1B Interface/Multi Station Access Unit*3
369	Dd206		Key Board		"	8570	
370	Dd206		Color Display 12		"	8513	
371	Dd206		Printer		EP	Series3	
372	Dd206		Plotter		EP	7550A	
373	Dd206	4	Working Desk for Students	15		1000 E	
374	Dd206	5	Working Desk for Teacher	2		OA Table 1000 E	
375	Dd206	6	Working Desk for Plotter	1		Plotter Table	
376	Dd206	7	Working Chair for Students	15		OA Chair 3883271	
377	Dd206	8	Working Chair	2		OA Chair 3883281	
378	Dd206	9	Uninterrupt Power Supply for Students	15		TUPS-500E	500W
379	Dd206	10	Uninterrupt Power Supply for Teacher	2		TUPS-750E	750W
380	Dd206	11	Uninterrupt Power Supply for Lan	1		TUPS-1000E	1KW
381	Dd206	13	Soft Ware for Students	15			16ADDS14.0/C2./QBASIC/WORPERFECTY 5.1/123R2.2/DBASE4/MACROSSEX.2/FO RTRAN2

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NO.	ROOM	ITEM	NAME	Q'ty	MANUFACTURE	TYPE	REMARK
382	Dd206	14	Soft Ware for Teacher	1			IBDOSV4. 0/C2. /QBASIC/FORDFERFECTY 5. 1/123R2. 2/DBASE4/MACROSSEX. 2/F0 RTRAY2/COBOL2/BASIC COM. /PASCAL CO M. /AUTOCADZ
383	Dd206	15	NET WORK PROGRAM	1			Novell Netware V2. 15
384	Dd206	16	PC Lan support program	16			
385	Dd206	17	Free access floor	1		Novaflex 300s	ABREASTY

5 カリキュラム、教科書比較表

Curriculum VS Textbook Comparision Table

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PRACTICE	
SYMBOL OF CURRICULUM & SUBJECT NAME	NAME OF TEXTBOOK
FS-1-1 Computer Science 1	Information Technology Fundamentals
FS-1-2 Computer Science 2	ditto
FS-2-1 Electronic Drawing 1	Electronic Drawing
FS-2-2 Electronic Drawing 2	ditto
FS-2-3 Electronic drawing 3	CAD
FS-3 Working 1	FS-3 Guidelines of Working 1
FS-4 Working 2A (electric working)	FS-4 Guidelines of Working 2A
FS-5 Working 2B ( Electric working )	FS-5 Guidelines of Working 2B
FS-6 Electric lab. and practice	FS-6 Guidelines of Electric lab. and practice
FS-7 Electronic lab. and Practice	FS-7 Guidelines of Electronic Lab. AND PRACTICE
FS-8 ANALOG Lab. and Practice	FS-8 Guidelines of Analog Lab.
FS-9 DIGITAL Lab. and Practice	FS-9 Guidelines of Digital Lab.
FS-10 Electronic Practice	FS-10 Guidelines of Electronic Practice(10 courses)

LECTURE	
SYMBOL OF CURRICULUM & SUBJECT NAME	NAME OF TEXTBOOK
FS-11 Fundamental Electricity	Electricity Fundamentals
FS-12 Electronics Devices	Electronic Technology IA + IB
FS-13 Analog Electronics	Electronic Technology IA
FS-14 Digital Electronics	Electronic Technology IB + IB Instrumentation and Control
FS-15 Electronic Technology	Electronic Technology 2A, 2B Electrical Engineering IA
AC-2, 3, 4	Audio Video Technology
AV-2, 3, 4	Automatic Control Technology
CT-2, 3, 4	Computer Technology
IE-2, 3, 4	Industrial Electronics
TC-2, 3, 4	Telecommunication Technology

NAME OF TEXTBOOK	SYMBOL OF CURRICULUM
Information Technology Fundamentals	FS-1-1, FS-1-2
Electronics Drawing I	FS-2-1, FS-2-2
Electronic Drawing II	FS-2-3(CAD)
Guidelines of Working & Practice	FS-3, FS-4, FS-5, FS-7, FS-8, FS-9, FS-10
Electricity Fundamentals	FS-11
Electronic Technology IA	FS-12, FS-13
Electronic Technology IB	FS-14(Basic Logic Circuits, etc.)
Electronic Technology IIA	FS-15(Acoustics, Wire/Wireless commu., Audio Visual, Telecommu., )
Electronic Technology IIB	FS-15, CT-2, CT-3
Electronic Technology IIB	FS-15(Computer), CT-1, CT-2
General Teaching Guideline for Project Study	AC-1, AV-1, CT-1, IE-1, TC-1
Instrumentation and Control	AC-4, IE-4
Electrical Engineering IA	IE-2
Audio Video Technology	AV-2, AV-3, AV-4
Automatic Control Technology	AC-2, AC-3, AC-4
Computer Technology	CT-2, CT-3, CT-4
Industrial Electronics	IE-2, IE-3, IE-4
Telecommunication Technology	TC-2, TC-3, TC-4



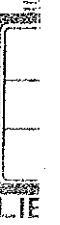








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