2010 MANPOWER SURVEY REPORT

ELECTRONICS INDUSTRY

電子業

2010 年人力調查報告

ELECTRONICS AND TELECOMMUNICATIONS TRAINING BOARD

VOCATIONAL TRAINING COUNCIL

職業訓練局

電子業及電訊業訓練委員會

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CONTENTS

目 錄

LIST OF APPENDICES AND ANNEXES

附錄及附件一覽表

Executive Summary of the
2010 Manpower Survey Report
of the Electronics Industry

Introduction

The survey was conducted in April 2010 by the Electronics and Telecommunications Training Board of the Vocational Training Council (VTC) to collect up-to-date manpower information by principal job in the electronics industry.

2.   The fieldwork of the manpower survey covered 694 establishments which were selected by means of a stratified random sampling method from a total of some 5 868 establishments.   The survey data collected from the selected establishments were scaled up statistically to reflect the overall manpower situation of the industry.

Survey Findings

3.   The survey revealed that in April 2010, a total of 128 854 persons were employed in the Hong Kong electronics industry.   Of the 128 854 employees, 52 115 were employed in principal jobs of electronics engineering and related disciplines in the electronics industry.   The distribution of employees by job level and by sector of the electronics industry is as follows:

Table A :   Distribution of Employees by Job Level and by Sector

Sector	Job Level				Total
	Technologist	Technician	Craftsman	Operative	
1. Manufacturing	998	2 283	1 166	2 559	**7 006** **13.4%**
2. Trading and Services	7 428	15 441	3 767	593	**27 229** **52.2%**
3. Telecommunications Services	2 212	4 441	945	144	**7 742** **14.9%**
4. Wholesale	314	1 663	572	50	**2 599** **5.0%**
5. Design Houses and Relevant Departments in Universities and Government	874	2 363	1 083	135	**4 455** **8.6%**
6. Retail Shops for Electronics Products (7 large shops)	7	3 077	-	-	**3 084** **5.9%**
Total **(Percentage of Total Manpower)**	**11 833** **22.7%**	**29 268** **56.2%**	**7 533** **14.5%**	**3 481** **6.6%**	**52 115** **100%**

4.	At the time of the survey, employers reported a total of 288 trainees and 846 vacancies in electronics engineering and related disciplines, representing 0.6% and 1.6% respectively of the workforce. Besides, employers also forecasted that the industry would require 53 258 workers by April 2011, an increase of 1.1% (1 143) of the workforce in April 2010.

Manpower Changes

5.	The total manpower in principal jobs of electronics and related disciplines of the industry has increased by 1.1% per annum from 50 960 workers in 2008 to 52 115 in 2010. In Sector 6, only the manpower of 7 Retail Shops for Electronics Products was surveyed for the second time which was not a full survey on the sector. Thus, for a better and direct manpower comparison, the Sector 6 is not included. If the manpower (3 084) of the new Sector 6 is not counted, the total manpower has recorded an annual slightly increase of 1.0% from 48 079 workers in 2008 to 49 031 in 2010. It recorded an annual increase of 4.5% in Sector 1 – Manufacturing and a very mild annual decrease of 0.1% in Sectors 2 and 4 – Trading, Services and Wholesale. On the other hand, the survey showed that there was annual slight increase of 2.1% and 1.5% in Sector 3 – Telecommunication Services and Sector 5 – Design Houses and Government Departments respectively.

6	The followings attributed to the manpower changes by sector:

(i)	The annual manpower increase in Sector 1 was mainly due to a resurgence of consumer demand for various electronics products resulting from a general start of economic recovery of the world since the global financial crisis broke out in 2008;

(ii)	The very mild manpower decrease in Sectors 2 and 4 showed that the demand for capital electronics equipment and systems, data processing and tabulating services in the two sectors was stable;

(iii)	The continued mild manpower annual increase in Sector 3 reflected that the sector was still one of the key infrastructures of Hong Kong and it maintained to offer new telecommunication services to the public; and

(iv)	The slightly manpower increase in Sector 5 was mainly due to the continuous demand for electronics product design and steady IC design business in the sector.

Future Manpower Demand

7.	Based on the manpower trend, business outlook of the electronics industry and employers' forecast of future manpower requirements, the Training Board believes that in the years ahead, there will be an on-going demand for well trained technologists, technicians and craftsmen to maintain the development of the electronics industry. However, the demand for operatives (manufacturing) will be limited.

8.   In view of the latest development of the industry, the Training Board has also estimated the loss of manpower at different job levels due to workers leaving the electronics industry through retirement, migration to other industries and other causes. The Training Board has decided that the normal annual wastage rate of 3% be used for the loss of manpower at the technologist, technician and craftsman levels.

9.   The Training Board has estimated, by using the Adaptive Filtering Method for the manpower projection, the additional manpower required by the electronics industry for 2011 – 2013, which is given in Table B below.

Table B: Annual Manpower Demand in the Electronics Industry from 2011 to 2013

Job Level	Annual Average Additional Demand for Employees	
	Total	±10% Range
Technologist	742	668 - 816
Technician	1 344	1 209 - 1 478
Craftsman	482	433 - 530

Recommendation

10.   The Hong Kong electronics industry had a well recovery from the global financial crisis happened in 2008 and Hong Kong's economy is forecasted to maintain to grow. However, the continuous sharp increase of the appreciation of Renminbi, rise in wage, taxes and duties, and price increase in energy and materials cause a threat to the industry. The shortage of workers in the Pearl River Delta is another challenge. As a result, many manufacturing companies plan to relocate their production lines to a lower-cost country, i.e. Bangladesh. On the other hand, the 9.0-magnitude earthquake struck a large part of Japan on 11 March 2011 sparking a large tsunami that swept away not only houses and buildings but also electronics manufacturing plants. The total damage of the disaster has not been determined but it will sure affect the global electronics product market. Also in March 2011, the Mainland revealed its 12th Five-Year Plan which will boost its domestic consumer demand and lift up the level of urbanization. The Plan will also provide considerable opportunities for Hong Kong firms. In view of the above, the Training Board has a cautious optimistic view that the electronics industry will continue to grow. Thus, the Training Board recommends the following measures for employers to consider coping with present situation and challenges ahead:

      (i)   To streamline and diversify business to make company more effective and efficient than before;

     (ii)   To develop more value-added and cost effective products / services to increase competitive ability;

(iii)   To further strengthen the overall skill level and competency of the staff, especially the technical workforce, through appropriate training in order to become a much stronger and competitive organisation;

(iv)   To carry on to explore new business in the most cost effective way so as to strengthen market share; and

(v)   To continue to maintain and to deepen strong partnership with important customers and to establish new partnership with potential customers.

11.   Regarding the strength of skill and competency of staff, the Training Board suggests that on top of the individual company's training needs, the "Skills an Employee Need to Enhance" revealed by the survey will be a good reference on various aspects of training for employers.   In this particular situation, employers are recommended to step up their training efforts in order to ensure supply of well equipped manpower to meet the challenges and business opportunities ahead.   The Training Board also recommends Vocational Training Council and other training organizations to keep a close view on the above training needs of the electronics industry and provide such needs in time.

12.   The Training Board will conduct another manpower survey of the electronics industry in 2012 to review and update the manpower requirements of the industry.

SECTION I

INTRODUCTION

The Training Board

1.1   The Electronics and Telecommunications Training Board of the Vocational Training Council (VTC) is a statutory body appointed by the Government of the Hong Kong Special Administration Region (HKSAR) to be responsible for matters pertaining to manpower training in the electronics industry.   The Training Board comprises members nominated by major trade associations, professional bodies, worker unions, training and educational institutions, as well as representatives from government departments.   The membership and terms of reference of the Training Board are given in Annexes A and B respectively.

1.2   The Training Board is required by its terms of reference to determine the manpower needs of the electronics industry and to recommend to the VTC the development of vocational education and training facilities to meet such needs.

The Manpower Survey

1.3   The Training Board conducted a survey in April 2010 to collect up-to-date information on the manpower situation of the electronics industry.   The survey was conducted with the assistance of the Census and Statistics Department of the HKSAR Government.   Follow-up of the fieldwork finished in October and data processing was completed in the same month.

1.4   The following manpower statistics and information were collected from the survey:

 (i)   number of employees in various principal jobs at the time of the survey;

 (ii)   number of existing vacancies;

 (iii)   number of trainees;

 (iv)   employers' forecast of the total number of employees by April 2011;

 (v)   average monthly income of employees; and

 (vi)   employers' views on the preferred education, training mode and training period of employees.

1.5   Employers were also requested to provide other information such as the number of technologists, technicians and craftsmen who had been promoted in the past 12 months, and also those who had been deployed to work for more than 6 months outside Hong Kong during the 12 months prior to the survey, as well as the skills their needed to enhance.

Scope of Survey

1.6   The survey covered firms, relevant departments in the government and educational institutions in the following six sectors of the industry:

Sector 1: Manufacturing

Manufacturers of :

(a)   Computers and peripheral equipment (HSICs 262000, 281700, 952100);

(b)   Audio and video equipment (HSICs 264000, 953100);

(c)   Communications equipment and cables (HSICs 263000, 273100, 952200);

(d)   Magnetic and optical media, and reproduction of recorded media (HSICs 182000, 268000);

(e)   Electronic parts and components for computer and telecommunication equipment (HSIC 261100);

(f)   Electronic parts and components not elsewhere classified (HSIC 261900);

(g)   Electronic games and toys (HSIC 324500); and

(h)   Electronic industrial apparatus and measuring testing, navigating and control equipment (HSICs 265100, 331300).

Sector 2: Trading and Services

Establishments of :

(a)   Anti-burglar system intercommunication system installation and maintenance (HSICs 432104, 432105);

(b)   Imports and exports of:

(i)   Scientific and professional instruments and apparatus (HSICs451631, 452631)*;

(ii)   Telecommunications equipment and parts (HSICs 451611, 452611)*;

(iii)   Electrical goods (HSICs451452, 452452)*;

(iv)   Computers and computer peripherals and computer software (HSICs451601, 451602, 452601, 452602)*;

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(v)   Office appliances and equipment(HSICs 451634, 452634)*;

(c)   Data processing, hosting and related activities (HSICs 620101, 620199, 620200, 620900, 631100)*; and

(d)   Other electronics engineering services not included in (a) to (c).
(Appendix A)

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Sector 3: Telecommunication Services

Establishments of :

(a)   Telecommunications network operation services (HSIC 611000);

(b)   Other miscellaneous telecommunications activities nowhere else classified (HSIC 619900);

(c)   Internet access services (HSIC 619100); and

(d)   Radio broadcasting, motion picture, video and television programming, and broadcasting activities (HSICs 591100, 601000, 602000).

Sector 4: Wholesale

Establishments of wholesale of :

(a)   Telecommunications equipment and parts (HSIC 460611);

(b)   Electrical goods (excluding machinery, office and telecommunications equipment and appliances) (HSIC 460452);

(c)   Computers and computer peripheral equipment (HSICs 460601, 460602); and

(d)   Office machines, appliances and equipment (excluding computer, furniture and fixtures) (HSIC 460634).

Sector 5: Design houses and Relevant Departments in Universities and the Government

(a)   Electronics design houses;

(b)   Relevant educational institutions; and

(c)   Relevant government departments.

Sector 6: Retail Shops for Electronics Products (7 large shops)

Notes: *(1)*   *HSIC denotes Hong Kong Standard Industrial Classification*

         (2)   **Excluding those establishments with an employment size below 10 as they are unlikely to have a significant number of technical staff.*

1.7   Prior to the survey, the Census and Statistics Department recorded some 5 868 establishments in the above six sectors of the electronics industry in Hong Kong.   In view of the limited resources available, a stratified random sampling method was adopted and a total of 694 samples were selected to be surveyed.   The data collected were then processed and scaled up statistically to give an overall picture of the manpower situation of the industry.

Method of the Survey

1.8   Two weeks before the survey, relevant survey documents including questionnaire (Annex D), explanatory notes (Annex E) and list of principal jobs (Annex F) were mailed to the 694 establishments.   Prior publicity was also given through the local press and relevant trade and industrial organizations to solicit employers' co-operation in the survey.

1.9   During the survey period, interviewing officers of the Census and Statistics Department visited all 694 establishments to collect the completed questionnaires and, where required, to assist employers in completing them.   All returned questionnaires were scrutinized and where necessary, cross checked with the respondents.

Response to the Survey

1.10   Of the 694 establishments, 395 completed the questionnaires and 30 refused to supply information.   The remaining 269 establishments had either moved, closed and could not be traced, or no longer engaged in the trade.   The effective response rate was 92.4%.

1.11   During the survey, some of the establishments just provided the rough manpower information and did not give details of their employees' monthly income, number of trainees or number of vacancies at the date of survey.   The reasons were that they were too busy and not willing to provide confidential information of their organizations.

The Report

1.12   After follow-up of the fieldwork and data processing, the Training Board compiled in November 2010 a statistical report which presented the main manpower data collected from the survey.   The statistical report was subsequently mounted onto the VTC website for public information.

1.13   This report presents all the findings of the survey together with the Training Board's forecast of the training needs of the industry and recommendations on measures to meet these needs.   In the report, the terms "employees", "workers" and "manpower" refer to the total number of persons employed in the principal jobs at the time of the survey but excluding trainees and apprentices.   The term "trainees" means all persons receiving any form of training including those registered apprentices under a contract of apprenticeship.

SECTION II

SUMMARY OF SURVEY FINDINGS

Number of Persons Employed

2.1   The survey revealed that in April 2010, a total of 128 854 persons were employed in the electronics industry in Hong Kong.   Of them, 52 115 were engaged in the principal jobs of electronics engineering and related disciplines. The following paragraphs present only the manpower statistics of those employees employed in the principal jobs.

Distribution of Employees by Job Level and by Sector

2.2   The distribution of employees by job level and by sector of the electronics industry is shown in Table 2.1, Figure 2.1 and Figure 2.2.

Table 2.1 : Distribution of Employees by Job Level and by Sector

Sector	Job Level				Total (% of Total MP)
	Technologist	Technician	Craftsman	Operative	
1. Manufacturing	998	2 283	1 166	2 559	**7 006 (13.4%)**
2. Trading and Services	7 428	15 441	3 767	593	**27 229 (52.2%)**
3. Telecommunications Services	2 212	4 441	945	144	**7 742 (14.9%)**
4. Wholesale	314	1 663	572	50	**2 599 (5.0%)**
5. Design Houses and Relevant Departments in Universities and Government	874	2 363	1 083	135	**4 455 (8.6%)**
6. Retail Shops for Electronics Products (7 large shops)	7	3 077	-	-	**3 084 (5.9%)**
Total (Percentage (%) of Total Manpower (MP))	**11 833 22.7%**	**29 268 56.2%**	**7 533 14.5%**	**3 481 6.6%**	**52 115 100%**

Figure 2.1 :   Distribution of Employees by Job Level
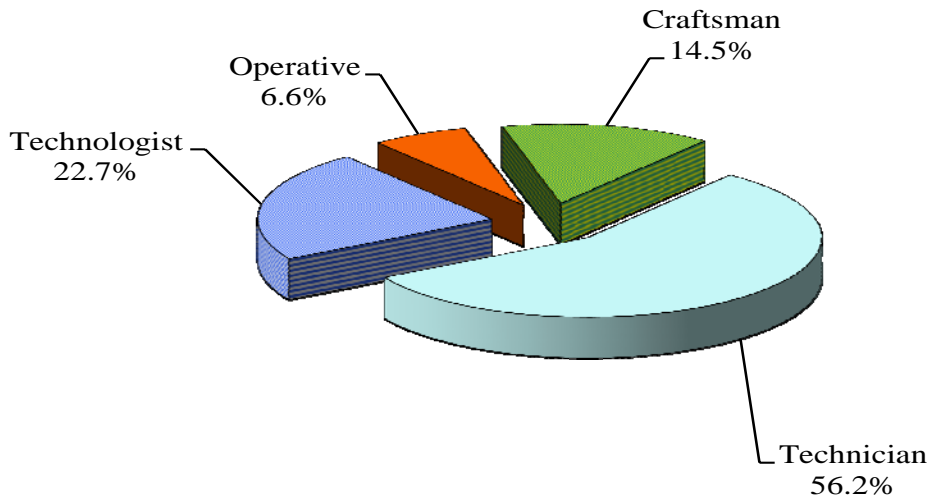
Figure 2.2 :   Distribution of Employees by Job Sector
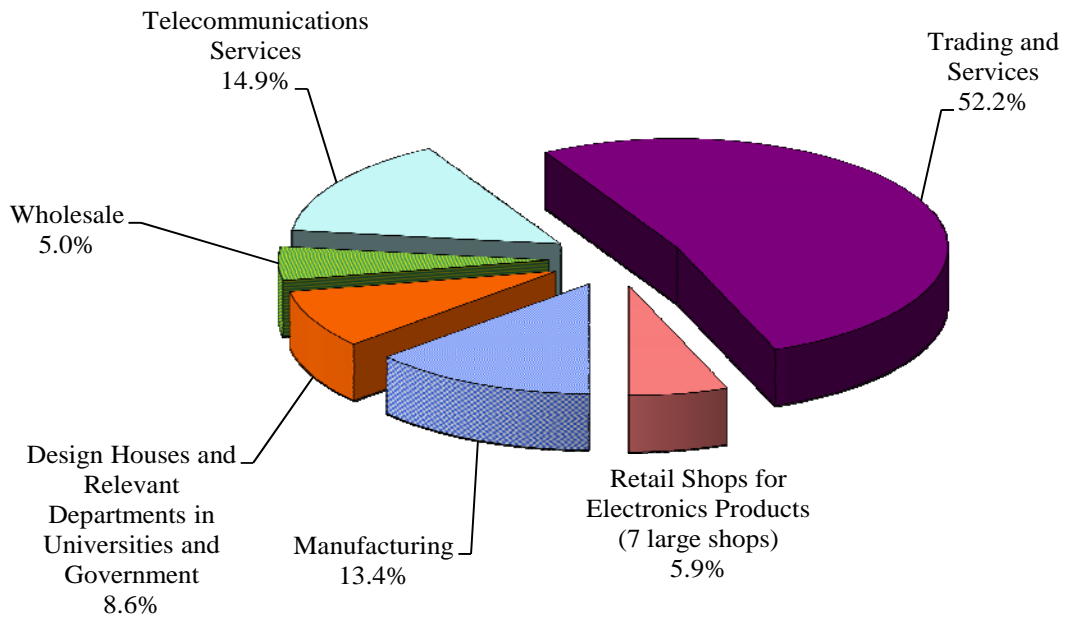
Number of Trainees

2.3　　　　At the time of the survey, there were 288 trainees in the electronics industry. Their distribution by job level is shown in Table 2.2:

Table 2.2 :　Distribution of Trainees by Job Level

Job Level	No. of Trainees (a)	No. of Employees (b)	Percentage $\frac{(a)}{(b)}$ x100%
Technologist	47	11　833	0.4%
Technician	69	29　268	0.2%
Craftsman	157	7　533	2.1%
Operative	15	3　481	0.4%
Total	**288**	**52　115**	**0.6%**

**Number of Vacancies at Time of Survey
and Forecast Manpower by April 2011**

2.4　　　　The total number of job vacancies was 846, or 1.62% of the total number employed in the electronics industry at the time of the survey.　Employers also forecast that there would be 53 258 employees in the industry by April 2011, which is 1 143 employees (1.1%) more than that in April 2010.

2.5　　　　A comparison of the manpower requirement at the time of survey and the employers' forecast of the number of employees by April 2011 is shown in Table 2.3 and Figure 2.3:

Table 2.3 :　Comparison of Manpower Requirement
by April 2010 and April 2011

Job Level	At Time of Survey (April 2010)			Forecast Total No. of Employees by April 2011	Forecast Increase/Decrease in Manpower Requirement
	No. of Employees	No. of Vacancies	Total Manpower Requirement		
Technologist	11　833	290	12　123	12　170	+0.4%
Technician	29　268	447	29　337	29　820	+1.6%
Craftsman	7　533	86	7　690	7　788	+1.3%
Operative	3　481	23	3　496	3　480	-0.5%
Total	**52　115**	**846**	**52　646**	**53　258**	**+1.1%**

Figure 2.3 :   Comparison of Manpower Requirement
by April 2010and April 2011

Manpower
Requirement
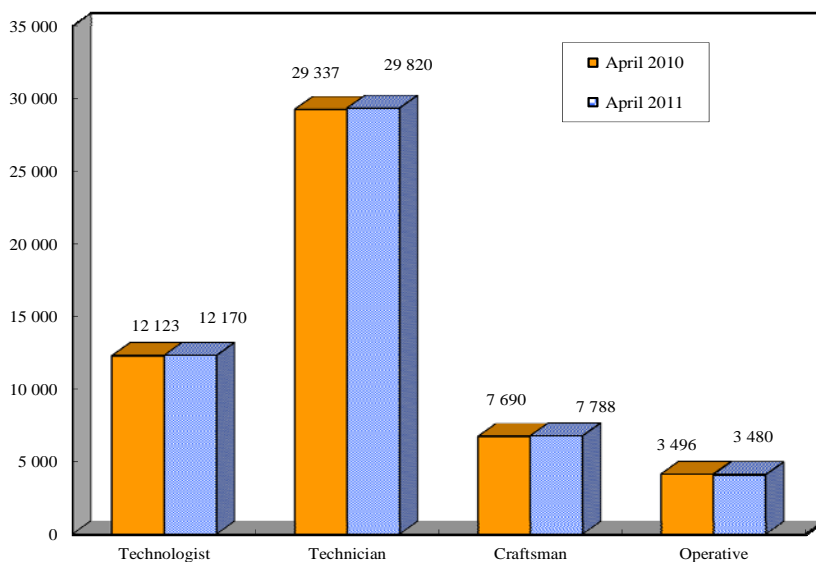
Total Monthly Income Range of Employees

2.6   The distribution of employees by total monthly income range in the electronics industry is shown in Table 2.4 and Figure 2.4:

Table 2.4 :   Distribution of Employees
by Total Monthly Income Range

Job Level	Below $6,001	$6,001-$8,000	$8,001-$10,000	$10,001-$15,000	$15,001-$20,000	$20,001-$25,000	$25,001-$30,000	Over $30,000	Un-specified
Technologist	-	-	-	468	1 997	2 150	2 095	1 541	3 582
Technician	1	411	1 482	7 629	6 767	3 505	1 158	640	7 675
Craftsman	114	666	2 269	3 514	126	-	-	-	844
Operative	114	1 062	689	2	-	-	-	-	1 614
Total	**229**	**2 139**	**4 440**	**11 613**	**8 890**	**5 655**	**3 253**	**2 181**	**13 715**

Figure 2.4 :   Distribution of Employees
by Total Monthly Income Range

No. of
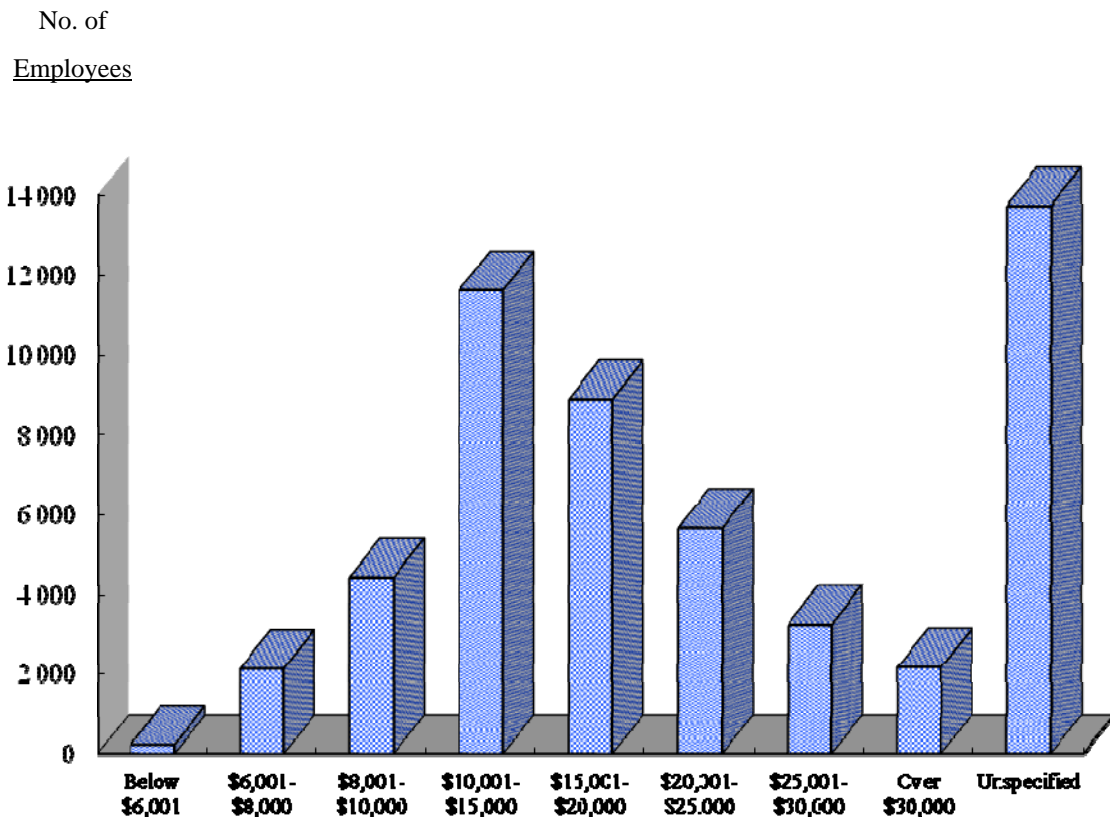
Employees

**Preferred Education, Mode of Training and
Period of Training of Employees**

2.7   The majority views of employers on the preferred education, mode of training
and period of training of their technologists, technicians and craftsmen are shown in
Table 2.5:

Table 2.5 :   Preferred Education, Mode of Training and
Period of Training of Employees

Job Level	Preferred Education	Preferred Mode of Training	Preferred Period of Training
Technologist	Degree/ Associateship or equivalent	On-the-job Training	3 – 4 years
Technician	Associate Degree/ Higher Diploma	On-the-job Training	3 – 4 years
Craftsman	Craft Certificate	On-the-job Training	1 – 2 years

Internal Promotion

2.8   In the twelve months prior to the survey, a total of 451 employees were promoted to higher level jobs in their own companies.   Their distributions in each job level are shown below:

Table 2.6 :   Internal Promotion

Internal Promotion	No. of Employees Promoted (a)	Total No. of Employees at the Promoted Level (b)	Percentage $\dfrac{(a)}{(b)}$ x100%
From Technician to Technologist	204	11 833	1.7%
From Craftsman to Technician	239	29 268	0.8%
From Other Levels to Craftsman	8	7 533	0.1%
Total	**451**	**48 634**	**0.9%**

Employees Deployed to

Work Outside Hong Kong

2.9   Employers reported the following number of employees who had been deployed to work outside Hong Kong more than 6 months during the 12 months prior to the survey:

Table 2.7 :   No. of Employees Deployed to Work Outside Hong Kong

Job Level	No. of Employees Deployed to Work Outside Hong Kong (a)	Total No. of Employees at Same Job Level (b)	Percentage $\dfrac{(a)}{(b)}$ x100%
Technologist	1 252	11 833	10.6%
Technician	1 094	29 268	3.7%
Craftsman	1	7 533	0.01%
Total	**2 347**	**48 634**	**4.8%**

Skills Employees Need to Enhance

2.10   The three most important skills that employees need to enhance are shown in Table 2.8:

Table 2.8 : No. of Employees by Skills Need to Enhance

| Job Level | The 3 most important skills that employees need to enhance | | | |
	Order	Code	Skills/ Knowledge/ Attributes	No. of Employees
Technologist	1.	401	Problem solving	2 836
	2.	103	Project management	2 130
	3.	413	Ability to learn/ adapt new skills/ knowledge	1 915
Technician	1.	411	Customer services skills	9 853
	2.	401	Problem solving	7 420
	3.	413	Ability to learn/ adapt new skills/ knowledge	6 905
Craftsman	1.	401	Problem solving	2 812
	2.	413	Ability to learn/ adapt new skills/ knowledge	1 538
	3.	404	Communication skills	1 189

Statistical Tables

2.11   Detailed manpower statistics analysed by principal job and by sector of the electronics industry are shown in Appendices 1 to 7.   The distribution of employers by their monthly income range is shown in Appendix 8 and the number of employees by skills need to enhance is shown in Appendix 9.

SECTION III

CONCLUSIONS

3.1 The Training Board has carefully examined the survey findings and is of the view that they generally reflect the employment situation of the electronics industry at the time of the survey.

3.2 The total manpower in principal jobs of electronics and related disciplines of the industry has increased by 1.1% per annum from 50 960 workers in 2008 to 52 115 in 2010. However, if the manpower (3 084) of the new Sector 6 is not counted, the total manpower has recorded an annual slightly increase of 1.0% from 48 079 workers in 2008 to 49 031 in 2010. An analysis of the manpower changes by sector and by skill level is detailed in the following paragraphs. Because of the close business and manpower nature of Sector 2 (Trading & Services) and Sector 4 (Wholesale), they are combined for manpower comparison and analysis purpose. In Sector 6, only the manpower of 7 Retail Shops for Electronics Products was surveyed for the second time which was not a full survey on the sector. Thus, for a better and direct manpower comparison, the Sector 6 is not included. The distribution and comparison of manpower in 2010 and 2008 by skill level and by sector is summarized in Table 3.1 below:

Table 3.1 : Comparison of Manpower in 2010 by Skill Level and
by Sector with the Manpower in 2008 (shown in bracket)

Skill Level	Sector 1	Sectors 2& 4	Sector 3	Sector 5	Total	Annual Change
	Manufacturing	Trading, Services and Wholesale	Telecom Services	Design Houses & Govern't Dept.		
Technologist	998	7 742	2 212	874	11 826	**-0.3%**
	(836)	(8 375)	(1 871)	(822)	(11 904)	
Technician	2 283	17 104	4 441	2 363	26 458	**+1.4%**
	(2 020)	(16 776)	(4 625)	(2 303)	(25 724)	
Craftsman	1 166	4 339	945	1 083	7 533	**+8.2%**
	(683)	(3 878)	(814)	(1 056)	(6 431)	
Operative	2 559	643	144	135	3 481	**-7.0%**
	(2 882)	(878)	(113)	(147)	(4 020)	
Total	7 006	29 828	7 742	4 455	49 031	**+1.0%**
	(6 421)	(29 907)	(7 423)	(4 328)	(48 079)	
Annual Change	**+4.5%**	**-0.1%**	**+2.1%**	**+1.5%**	**+1.0%**	

3.3   Figure 3.1 shows the manpower changes by sector of the industry between 2002 and 2010. It also demonstrates the manpower change of the electronics industry during the past several years since the scope of the manpower survey of the industry has been revised significantly.

Figure 3.1 :   Manpower Changes by Sector
between 2002 and 2010

No. of Employees
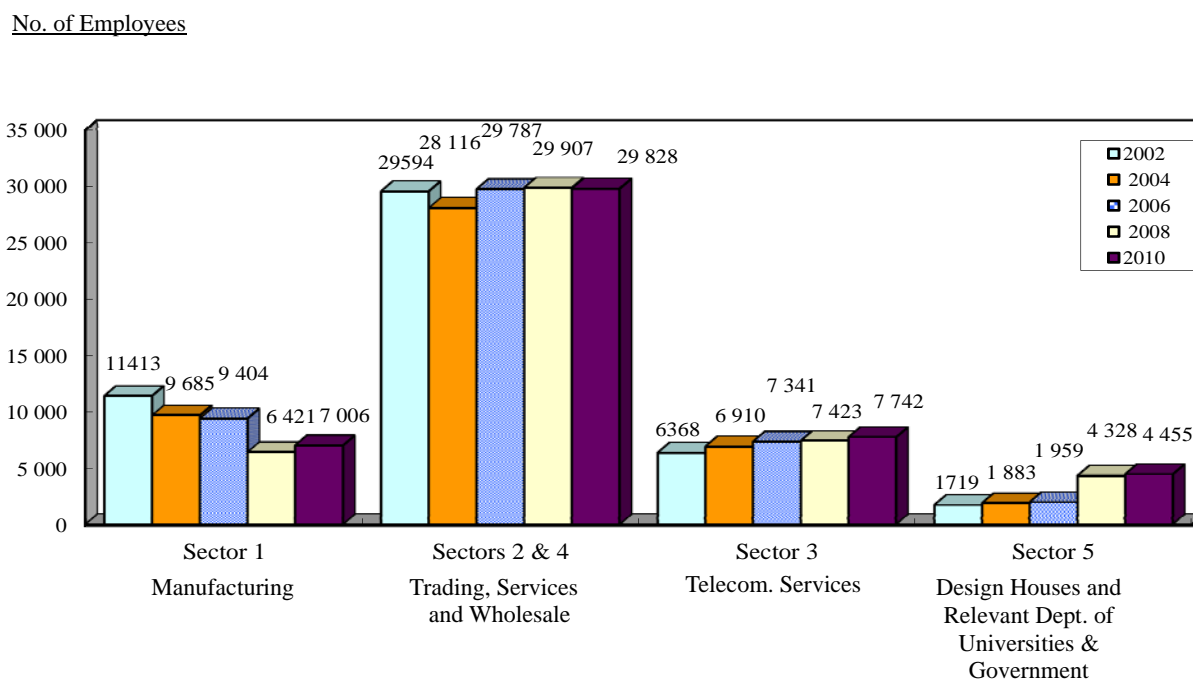
Manpower Changes by Sector

3.4   Table 3.1 shows that the total manpower of the electronics industry increased only 952 workers, or by 1.0% over the past two years.   It recorded an annual increase of 4.5% in Sector 1 – Manufacturing and a very mild annual decrease of 0.1% in Sectors 2 and 4 – Trading, Services and Wholesale.   On the other hand, the survey showed that there was annual slight increase of 2.1% and 1.5% in Sector 3 – Telecommunication Services and Sector 5 – Design Houses and Government Departments respectively.

3.5   The followings attributed to the manpower changes by sector:

    (v)   The annual manpower increase in Sector 1 was mainly due to a resurgence of consumer demand for various electronics products resulting from a general start of economic recovery of the world since the global financial crisis broke out in 2008;

    (vi)   The very mild manpower decrease in Sectors 2 and 4 showed that the demand for capital electronics equipment and systems, data processing and tabulating services in the two sectors was stable;

17

(vii)   The continued mild manpower annual increase in Sector 3 reflected that the sector was still one of the key infrastructures of Hong Kong and it maintained to offer new telecommunication services to the public; and

(viii)   The slightly manpower increase in Sector 5 was mainly due to the continuous demand for electronics product design and steady IC design business in the sector.

Manpower Changes by Job Level

3.6   The manpower change by job level from 2002 to 2010 is shown in Figure 3.2:

Figure 3.2 :   Manpower Changes by Job Level
between 2002 and 2010

No. of Employees
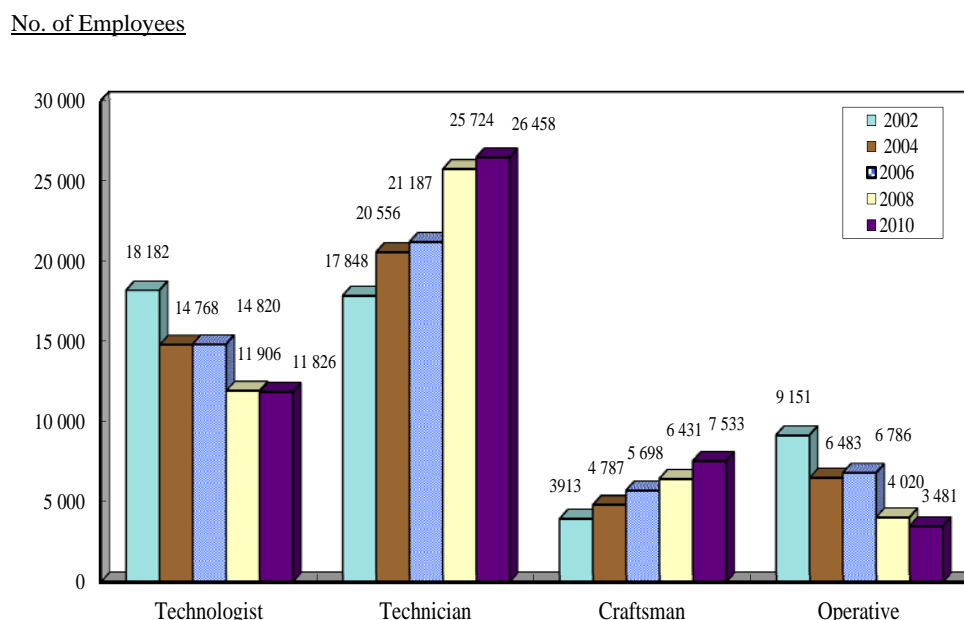
3.7   Figure 3.2 shows the continuous decrease of manpower in technologists and operative workers while the continuous increase in technician and craftsman. The survey also revealed a slight decrease of technologists but continuous demand for technicians and craftsmen between 2008 and 2010.   The followings attributed to such manpower changes by job level:

(i)   The very mild annual decrease of 0.3% of technologists might be due to the continuous restructuring of the wage level of technologists and technicians to cope with the business environment in Sector 2 of the electronics industry over the past two years. In the period, more technicians were usually recruited to replace those technologists who were laid off by companies/retired from work.   The raise of technologists in

18

Sectors 1, 3 and 5 was the results of continuous demand for electronics design products and steady IC design business as well as provision of new telecommunication services, which usually required high skill level workers;

(ii)   The mild annual increase of 1.3% of technicians was attributed by the same reason mentioned in (i) and the increase in business in Sector 5. Besides, the survey also revealed that a total of 3 084 Sales Technicians (annual increase of 3.5%) were employed in the new Sector 6 – 7 large retails shops for electronics products; and

(iii)   The annual increase of 8.2% of craftsmen was mainly due to the increase in business in Sectors 1, 3 and 5.

Business Outlook

Whole Industry

3.8   The electronics industry is still the largest merchandise export earner of Hong Kong.   It is mainly due to rapid expansion of the Mainland in outward processing production and the resurgence of consumer demand for various electronics products in Europe and the United States of America.   In 2010, the total exports of electronic products surged by 28% over the previous year to HK$1,690,949 million.   Details of the export values of electronic products between 2006 and 2010 are shown in Table 3.2 and Figure 3.3.

Table 3.2 :   Export Values of Electronic Products

Electronic Products	Value (HK$ Million)				
	2006	2007	2008	2009	2010
Domestic Exports	36 585	21 389	18 666	15 022	17 156
Re-Exports	1 177 932	1 327 958	1 420 489	1 305 236	1 673 793
Total Exports	1 214 517	1 349 347	1 439 155	1 320 258	1 690 949

Source :Hong Kong External Merchandise Trade Statistics, Census and Statistics Department

Figure 3.3 :   Export Values of Electronic Products

HK$ Million

	Domestic Exports	Re-Exports
2006	36 585	1 177 932
2007	21 389	1 327 958
2008	18 666	1 420 489
2009	15 022	1 305 236
2010	17 156	1 673 793
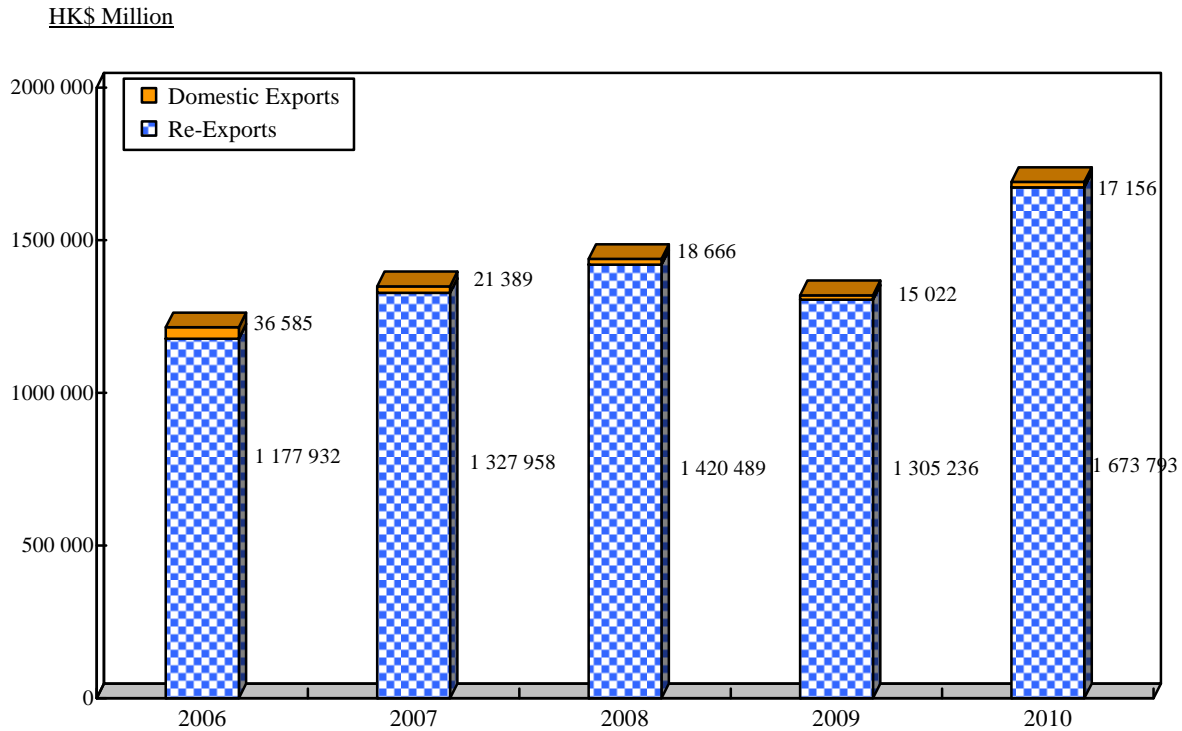
3.9   With the existing benefit of zero imported tariffs in the Mainland since the implementation of the seventh phase of the Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA VII) in May 2010, and the reveal of China 12th Five-Year Plan in March 2011, the opening of the Mainland market further provides considerable opportunities for Hong Kong firms.

3.10   The Hong Kong electronics industry has a well recovery from the globe financial crisis broke out in 2008. However, the implementation of the Mainland's Labour Contract Law together with Processing Trade Policy becomes essential operating cost items.   The growing popularity of green concept together with compliance with safety requirements resulting the tightening of environment laws in China and other countries, including the China Compulsory Certification (CCC), Directive on WEEE (Waste Electrical and Electronic Equipment) and the Directive on RoHS (Restriction of Hazardous Substances), had imposed great pressure on Sector 1 (Manufacturing) in the past years.   It is expected that such pressure will continue in the coming years.

3.11   Also, the non-stop increase of the appreciation of Renminbi, rise in wage, taxes and duties, and price increase in energy and materials will still make the operating cost at a high level.   The shortage of workers in the Pearl River Delta is another challenge.   On the other hand, other than the Mainland enterprises, other Asian manufacturers have continuously posed a strong competition to Hong Kong electronics manufacturing sector.

3.12   Hong Kong will continue to be a popular sourcing centre for parts and components as well as high-end consumer electronics products.   In view of the continuous increase in vehicle production in the Mainland, there will be a growing demand of car audio

20

and related products as well as electronics components in automobiles. The merits of LEDs (Light Emitting Diodes) in light weight, small size, long life operation, energy saving and easy to control, make them further widely adapted in various application areas like road signage, message board, lighting and displays. The other type LED, active-matrix organic light emitting diode (AMOLED), is expected to be commonly used in displays for mobile devices and televisions in the coming years.

3.13   Hong Kong's economy is forecasted to continue to grow causing the close business nature of Sector 2 (Trading & Services), Sector 4 (Wholesale) and the new Sector 6 (Retail Shops for Electronics Products) benefitted from the growth. In Sector 3 (Telecommunication Services), the Training Board considers that it will be quite stable as new telecommunication services will continue to provide to the public.

3.14   The Training Board considers that the design houses in Sector 5 will stick at developing their own products as to match the latest technological development in the industry and to maintain their competitiveness in the market. On the other hand, IC design will maintain its valuable contributions to the manufacturing sector. In view of the well protection of intellectual property in Hong Kong and vast design experience with good reputations, the IC design sector will continue to grow in future.

3.15   The 9.0-magnitude earthquake, the biggest one in its history, struck a large part of Japan on 11 March 2011 sparking a large tsunami that swept away houses, buildings and cars along Japan's eastern coast. The earthquake also disrupted two nuclear plants and damaged many semiconductor plants and electronics manufacturing factories in the areas. The impacts of such disaster on human loss and economic damage as well as the electronics industry are yet to determine but are expected to be huge. As Japan is one of the main global suppliers of electronic equipment, semiconductors, large-sized LCD panels, DRAMs, NAND flash memories and other components and parts, the Training Board considers that the worldwide semiconductor supplies and global consumer electronics products will seriously be affected.

Product Trend

3.16   Since the introduction of the Apple iPad in April 2010, it was so well accepted by the public over the world. It is a tablet personal computer (PC) with special features of a large multi-touch liquid crystal display (LCD) screen, Wi-Fi (Wireless Fidelity, wireless LAN) and 3G (cellular HSDPA (High Speed Download Packet Access)) connectivity and voice recording. It is also a multimedia platform for books, magazines, music, web contents, movie and games. iPad has stirred up the PC market that many electronics firms have designed the similar products in the market. In light of the increasing popularity of tablet PCs and sales declining of netbook PCs worldwide, it is expected the tablet PCs will soon take over netbook PCs. On the other hand, more notebook PCs with powerful features like high speed wireless connectivity, power saving, USB 3.0 socket, multimedia, multi-touch LED display, video conferencing, GPS (Global Positioning System) and cloud computing function, will be the trend and they are expected to grow in the coming years. Also, the general computer peripherals such as USB flash drives, webcams, speakers, scanners and printers are still in large demand and some of them are fancy designed to catch more market share.

3.17   Amid the rapid growth of broadband Internet access, "wireless connection at anywhere and anytime" already becomes a common wireless application concept in mobile Internet devices like smartphones.   In addition to normal features of MP3, voice recording, radio and HD camera shooting, they are installed with special features like movie playback function, GPS, video conferencing and Internet surfing.   The introduction of application stores (APPS) service makes them more acceptable by the public and such service is expected in great demand.   As a result, many electronics companies have design different types of smartphones with different operating systems and features to strengthen their market shares. More smartphones with various advanced features and interfaces of faster communication and higher data transfer rate are in growing demand.

3.18   Regarding consumer electronics products, especially in the audio-visual sector, digitalization with portability and convergence is still the development trend. In particular, digital camcorders and digital cameras with enhanced features like 3D (Three Dimension) are in strong demand.   On the other hand, the simplified low-cost version digital single-lens reflex cameras (DSLR) for high-definition (HD) resolution shooting will become more popular in the market. With the rapid development of e-Publishing, e-Book readers installed with additional features such as radio, digital voice recording and MP3 (MPEG-2 Audio Layer III) will grow in the coming years. The other important market is home/personal multimedia entertainment sector.   Blue-ray DVD player and recorder will gradually replace DVD player and recorder in few years.

3.19   Since the digital television broadcasting service in Hong Kong staring from 31 December 2007, it has covered nearly every part of the city and is well accepted by the public. HDTV set-top-box and digital TV are still expected in strong demand in the coming years. The HD digital TV installed with large LED-backlight LCD or AMOLED screen and built-in 3D effect, Internet surfing and recording functions (aiming for more entertainment and future commercial activities) will become customers' favour. On the other hand, the development of mobile TV is in progress, which will be a hot entertainment product in the coming years. The digital audio broadcast (DAB) will be in services in Hong Kong by mid 2012.   The radio for DAB will be another hot future product in the market.   Also, the LTE (Long Term Evolution) and WiMAX (Worldwide Interoperability for Microwave Access) are the potential technology for future 4G (4th Generation) mobile phone communication.

3.20   The other popular products such as health care electronics products, long-life batteries (especially those used in the e-Car) and energy saving LED lighting are expected to grow.   On the other hand, the continuous introduction of new video game stations with popular applications such as Internet surfing and multi-touch HD screen, the electronics toys and games are still the demanding products both for youngsters and adults.

Future Manpower Demand

3.21   Based on the manpower trend, business outlook of the electronics industry and employers' forecast of future manpower requirements, the Training Board believes that in the years ahead, there will be an on-going demand for well trained technologists, technicians and craftsmen to maintain the development of the electronics industry. However, the demand for operatives (manufacturing) will be limited.

3.22   In view of the latest development of the industry, the Training Board has also estimated the loss of manpower at different job levels due to workers leaving the electronics industry through retirement, migration to other industries and other causes. The Training Board has decided that the normal annual wastage rate of 3% be used for the loss of manpower at the technologist, technician and craftsman levels.

3.23   The Training Board has estimated, by using the Adaptive Filtering Method for the manpower projection, the additional manpower required by the electronics industry for 2011 – 2013, which is given in Table 3.3 below. A breakdown of the training requirements into principal jobs is shown in Appendix 10.

Table 3.3:   Annual Manpower Demand in the Electronics Industry
from 2011 to 2013

Job Level	Annual Average Additional Demand for Employees	
	Total	±10% Range
Technologist	742	668 - 816
Technician	1 344	1 209 - 1 478
Craftsman	482	433 - 530

3.24   The Training Board will conduct another manpower survey of the electronics industry in 2012 to review and update the manpower requirements of the industry.

SECTION IV

RECOMMENDATIONS

4.1   The Hong Kong electronics industry had a well recovery from the global financial crisis happened in 2008 and Hong Kong's economy is forecasted to maintain to grow. However, the continuous sharp increase of the appreciation of Renminbi, rise in wage, taxes and duties, and price increase in energy and materials cause a threat to the industry. The shortage of workers in the Pearl River Delta is another challenge. As a result, many manufacturing companies plan to relocate their production lines to a lower-cost country, i.e. Bangladesh. On the other hand, the 9.0-magnitude earthquake struck a large part of Japan on 11 March 2011 sparking a large tsunami that swept away not only houses and buildings but also electronics manufacturing plants. The total damage of the disaster has not been determined but it will sure affect the global electronics product market. Also in March 2011, the Mainland revealed its 12th Five-Year Plan which will boost its domestic consumer demand and lift up the level of urbanization. The Plan will also provide considerable opportunities for Hong Kong firms. In view of the above, the Training Board has a cautious optimistic view that the electronics industry will continue to grow. Thus, the Training Board recommends the following measures for employers to consider coping with present situation and challenges ahead:

     (i)   To streamline and diversify business to make company more effective and efficient than before;

    (ii)   To develop more value-added and cost effective products / services to increase competitive ability;

   (iii)   To further strengthen the overall skill level and competency of the staff, especially the technical workforce, through appropriate training in order to become a much stronger and competitive organisation;

   (iv)   To carry on to explore new business in the most cost effective way so as to strengthen market share; and

    (v)   To continue to maintain and to deepen strong partnership with important customers and to establish new partnership with potential customers.

4.2   Regarding the strength of skill and competency of staff, the Training Board suggests that on top of the individual company's training needs, the "Skills an Employee Need to Enhance" at Appendix 9 will be a good reference on various aspects of training for employers. In this particular situation, employers are recommended to step up their training efforts in order to ensure supply of well equipped manpower to meet the challenges and business opportunities ahead. The Training Board also recommends Vocational Training Council and other training organizations to keep a close view on the above training needs of the electronics industry and provide such needs in time.

Annual Intake of Trainees

4.3   At the time of the survey, there were only 47, 69 and 157 trainees respectively at the technologist, technician and craftsman levels.   Since it normally takes two to four years to train a technologist and three to four years a technician or a craftsman, it is evident that the present training efforts provided by employers are insufficient to satisfy the industry's needs.

4.4   The Training Board recommends that the industry as a whole should embark on a training programme of a scale as set out in paragraph 3.23 for 2011 – 2013.   A breakdown of the training requirements into various principal jobs is given at Appendix 10.   For manpower planning at the company level, individual employers are requested to note that the volume of training when expressed in terms of existing manpower represents an average annual intake of trainees of about 6.3%, 4.6% and 6.4% respectively of the total number of technologists, technicians and craftsmen presently employed.

4.5   The recommended training routes for technologists, technicians and craftsmen are outlined in the following paragraphs.

Training of Technologists

4.6   A technologist is a person who has the qualifications and experience equivalent to those required for corporate membership of a professional institution.   He should be competent in analyzing and solving a wide range of technical problems.   Furthermore, he should be able to assume personal responsibility for the development and application of engineering principles, exercise original thought and judgment, follow progress in his field of technology, apply the latest techniques, supervise and develop his sub-ordinates.

4.7   Technologists play an important role in bringing about improvement in management and technological innovations.   The Training Board recommends that technologists should be trained via the following route:

Figure 4.1 :   Training of Technologists

```
┌─────────────────────────────────────────────────────────┐
│   Completion of a relevant degree course leading to      │
│                                                          │
│  exemption from the academic requirements for corporate  │
└─────────────────────────────────────────────────────────┘
                            │
                            ▼
        ┌─────────────────────────────────────────────┐
        │ A minimum of 2-year organized on-the-job training │
        └─────────────────────────────────────────────┘
                            │
                            ▼
        ┌─────────────────────────────────────────────┐
        │ A minimum of 2-year experience in a responsible position │
        └─────────────────────────────────────────────┘
                            │
                            ▼
                ┌───────────────────────┐
                │     Technologist      │
                └───────────────────────┘
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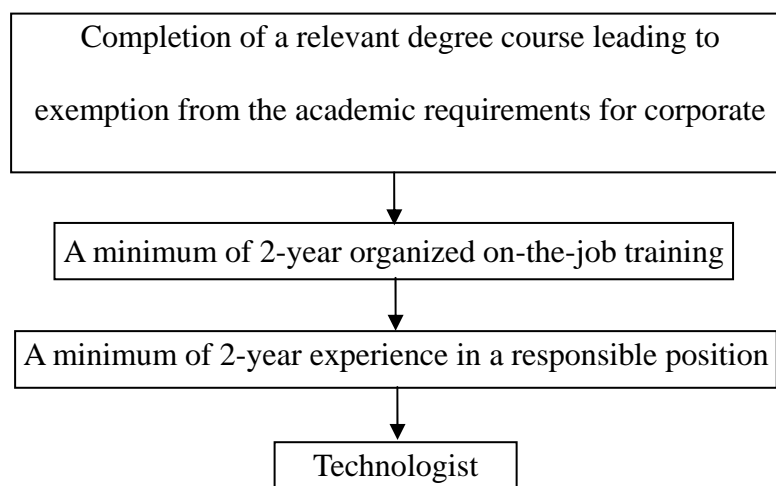
4.8   A number of local educational institutions funded by the University Grants Committee (UGC)offer various degree courses in electronic engineering and related disciplines.   The following table shows the estimated number of graduates from these full-time engineering degree courses in 2011/12 and 2012/13:

Table 4.1: Estimated Number of Graduates from
UGC-funded Institutions

Full-time Degree Programme	Estimated Number of Graduates	
	2011/12	2012/13
Electronic Engineering	242	207
Computer Engineering	164	185
Information engineering	199	197
Electronic and Communication Engineering	129	143
Electronic and Information Engineering	140	121
Information & Communication Engineering	17	34
Internet & Multimedia Technology	43	38
System Engineering & Engineering Management	93	89
Total	1 027	1 014

4.9   The forecast demand for related technologist level jobs (Electronics Engineer, Manufacturing/QA Engineer and System Analyst) in the industry is about 58 – 714 annually in the next three years.   The supply of graduates from electronic engineering and related disciplines should be able to meet the forecast demand. In general, the graduates also take up electronics engineering and related jobs in other industries such as electrical and mechanical services, information technology and manufacturing.

Engineering Graduate Training Scheme (EGTS)

4.10   To bring about more well-structured practical training opportunities in local industries for engineering graduates, the Committee on Training of Technologists of the Vocational Training Council is operating a subsidized training scheme to provide engineering graduates with 18 months practical training of a standard acceptable for corporate membership of the Hong Kong Institution of Engineers.   Each graduate receiving training under the scheme is granted a subsidy through his employer as part of his salary and the training progress is monitored by the Committee.

New Technology Training Scheme (NTTS)

4.11   Since 1992, the Vocational Training Council has been operating the New

Technology Training Scheme to provide assistance to companies in Hong Kong that wish to have their staff trained in a technology that would be useful to their business. In the context of the scheme, new technologies include those which are not widely applied in Hong Kong and the absorption and application of which will benefit Hong Kong. Any employer in Hong Kong wishing to acquire a new technology for industrial and commercial application may apply for training grant under the Scheme. The Training Board encourages employers to make good use of the Scheme.

Training of Technicians

4.12   A technician is one who occupies a position between the technologist and the craftsman.   His education, training and practical experience should enable him to apply proven techniques to solve technical problems.   His is expected to carry a measure of technical responsibility, normally under the guidance of a technologist.   The routes available for training technicians are shown in Figure 4.2.

Figure 4.2: Training of Technicians
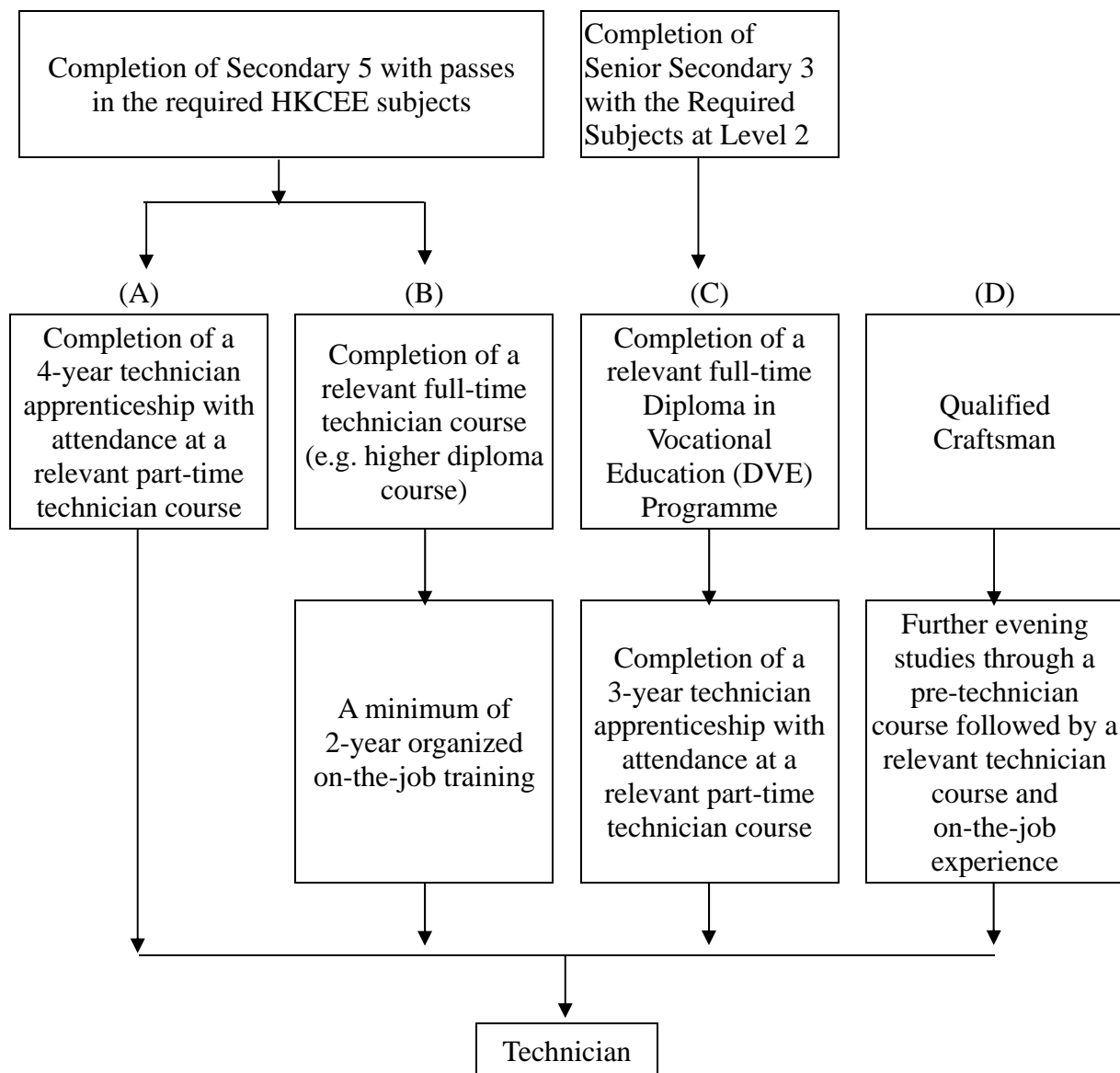
4.13   The Hong Kong Polytechnic University and the Hong Kong Institute of Vocational Education (IVE) of the VTC offer a range of higher diploma courses in electronic engineering and related disciplines. The following table shows the estimated number of graduates from the relevant full-time higher diploma courses of these two institutions:

Table 4.2:   Estimated Number of Higher Diploma Graduates

Full-time Higher Diploma Programme	Estimated No. of Graduates	
	2011/12	2012/13
Electronic and Communications Engineering	78	60
Electronic & Information Engineering	46	40
Digital TV and Motion Picture Engineering	71	77
Computer and Information Engineering	70	70
Internet/Multimedia Engineering	75	75
Multimedia Design & Technology	125	125
Total	465	447

4.14   The Pro-Act Training and Development Centre (Electronics) serves Youth College of the VTC to offer a 1-year full-time Diploma in Vocational Education Awards of a DVE Programme – Digital Electronics Technology Stream for Secondary 6 school leavers. The estimated number of graduates from the course is nil in 2011/12 and about 100 from 2012/2013 onwards.

4.15   The forecast demand for related technician level jobs (Electronics Technician, Sales technician, Draughtsman, Manufacturing/QA Technician, Programmer, and Web Developer/Designer) in the industry for 2011/2012 is 1 074 – 1 312 annually. The total supply of Higher Diploma graduates and training centre technician course graduates is about 465 which is lower than the forecast demand. However, some of the technician jobs may be filled by the training of secondary school leavers through apprenticeship and internal promotion of experienced craftsmen.   It is noted that there were 69 technician trainees in the industry at the time of the survey, and a total of 239 employees were promoted to the technician level jobs in the twelve months prior to the survey.

Training of Craftsmen

4.16   A craftsman is a skilled worker who is able to apply a wide range of skills to his work with minimum direction and supervision.   He requires not only practical skills but also related theoretical knowledge to enable him to adapt himself to new technologies.   A proper craft apprenticeship would contain both components.   The common routes for training craftsmen are shown in Figure 4.3:

Figure 4.3:   Training of Craftsmen

(A)	(B)
Completion of a relevant full-time Diploma in Vocational Education (DVE) Programme with Basic Craft Certificate (BCC) Award	Completion of Secondary 3 or above
↓	↓
2 to 3-year craft apprenticeship with attendance at a relevant part-time DVE Programme with Craft Certificate Award	3 to 4-year craft apprenticeship with attendance at a relevant part-time craft DVE Programme with Craft Certificate Award

Craftsman

4.17   The Training Board recommends route (A) because the apprenticeship period is shorter and the apprentices have already undergone proper basic training and would be productive right from the start of their apprenticeship.

4.18   The Pro-Act Training and Development Centre (Electronics) works in collaboration with Youth College of the VTC to offer a Multi-Entry-Multi-Exit (MEME) Diploma in Vocational Education (DVE) Programme – Digital Electronics Technology Stream for Secondary 3 school leavers.   Some 50 students of the DVE are planned to receive training on competence and award of technician for respective jobs in the electronics industry. The forecast demand for related craft jobs (Cable Jointer/Wireman, and Electronics Craftsman) in the industry for 2011/2012 is 338 – 414 annually. The output from the training centre falls short of the projected demand for craftsmen.   However, the shortage can be alleviated by training of Secondary 3 school leavers through apprenticeship.   It is noted that there were 157 craft trainees in the industry at the time of the survey and a total of 8 employees were promoted to the craftsman level jobs in the twelve months prior to the survey.

Educational and Training Institutions

4.19　　The Hong Kong Institute of Vocational Education of the VTC and the Pro-Act Training and Development Centre (Electronics), as well as several tertiary institutions, offer a wide range of pre-employment and in-service training courses for workers in the electronics industry.　The Training Board strongly urges employers in the industry to make full use of the training facilities in these institutions by recruiting their graduates as apprentices/trainees and sponsoring employees to attend relevant upgrading courses.

Hong Kong Science and Technology Parks Corporation

4.20　　The Hong Kong Science and Technology Parks Corporation (HKSTP) was established in 2001 by the HKSAR Government to offer one-stop infrastructural support services to technology-based companies and activities in a synergetic manner, ranging from nurturing start-ups through incubation programmes, providing premises and services in the Science Park for applied research and development activities, creating and sustaining a design cluster in the InnoCentre, to offering land and premises in industrial estates for production.　The park provides an effective research and development environment and support services to facilitate collaboration and synergy among its tenants under four clusters – electronics, information technology and telecommunications, biotechnology and precision engineering.　Advanced facilities and services provided include an IC Design Centre, an IC Failure Analysis Laboratory, a Photonics Centre, a Wireless Communication Test Laboratory, a Biotechnology Support Laboratory, Solid State Lighting Test Services, a Solar Energy Technology Support Centre and a material Analysis Laboratory.　The Training Board urges employers to make good use of the facilities and services offered by the HKSTP, especially those for IC design.

Training Services of the Vocational Training Council

4.21　　The Vocational Training Council offers free services to help employers organize the statutory apprenticeship training schemes through which technicians and craftsmen can be effectively trained to meet the needs of the industry.　The Training Board recommends employers to contact the Council for assistance in setting up training schemes and recruiting apprentices/trainee.

電子業
2010 年人力調查報告摘要

緒論

　　　　職業訓練局 *[VTC]* 轄下電子業及電訊業訓練委員會（下稱「本會」）於 2010 年 4 月進行電子業人力調查，以蒐集業內主要職務的最新人力資料。

2.　　　　本會採用分層隨機抽樣方法，於約 5 868 間機構中選出共 694 間機構為調查對象。調查所得資料其後以統計方法倍大，以反映業內的整體人力情況。

調查結果

3.　　　　是次調查顯示，2010 年 4 月時，本港電子業共僱用 128 854 人，其中 52 115 人擔任電子工程及相關範疇的主要職務。電子業各類機構各技能等級的僱員分布情況見表 A。

表 A：　　各類機構各技能等級的僱員分布情況

門類	技能等級				總數
	技師	技術員	技工	操作工	
7. 製造	998	2 283	1 166	2 559	**7 006** **13.4%**
8. 貿易及服務	7 428	15 441	3 767	593	**27 229** **52.2%**
9. 電訊服務	2 212	4 441	945	144	**7 742** **14.9%**
10.批發	314	1 663	572	50	**2 599** **5.0%**
11.設計公司、有關大學院系及政府部門	874	2 363	1 083	135	**4 455** **8.6%**
12.零售(7 間大型電子產品公司)	7	3 077	-	-	**3 084** **5.9%**
總數 **(佔僱員總數百分率)**	**11 833** **22.7%**	**29 268** **56.2%**	**7 533** **14.5%**	**3 481** **6.6%**	**52 115** **100%**

4. 　　　調查期間，僱主填報電子工程及相關行業共有受訓者 288 人，空缺則有 846 個，分別佔業內人力的 0.6%及 1.6%。僱主亦預測，至 2011 年 4 月時業內需求 53 258 名從業員，較 2010 年 4 月時增加 1 143 人（1.1%）。

人力變化

5. 　　　本業擔任電子及相關範疇主要職務的僱員總數每年增加1.1%，由2008年的50 960人增至2010年的52 115人；不過，由於門類六只有7間大型電子產品零售公司的人力納入是次調查範圍內，而且有關安排僅屬第二次，對該門類的調查未夠全面。因此，為更適當地直接比較各門類的人力情況，門類六並不包括在內。若撤除新增的門類六的僱員（3 084人），電子業的僱員總數每年僅微增1.0%，由2008年的48 079人增至2010年的49 031人。其中，門類一（製造）每年錄得4.5%的增幅；門類二及門類四（貿易、服務及批發），則每年錄得0.1%輕微跌幅。另一方面，門類三（電訊服務）及門類五（設計公司及政府部門）的僱員人數分別錄得每年2.1%和1.5%輕微增長。

6. 　　　各門類的人力變化原因如下：

(ix) 門類一僱員人數每年增加，主因是各國經歷 2008 年全球金融危機後，經濟普遍開始復甦，消費者對各種電子產品的需求再次湧現；

(x) 門類二及四人手輕微減少，顯示這兩個門類對資本電子設備和系統，以及資料處理和圖表編製服務的需求趨於穩定；

(xi) 門類三人手每年續有溫和增長，反映此門類仍為香港主要基礎建設之一，並繼續為市民推出新服務；及

(xii) 門類五人手輕微增加，主要是此門類對電子產品設計人才續有需求，以及集成電路設計業務穩步發展所致。

未來人力需求

7. 　　　根據人力趨勢、電子業業務前景，以及僱主對未來人力需求的預測，本會相信未來幾年，業界繼續需要幹練的技師、技術員及技工，以維持行業發展；惟對操作工(製造)的需求則有限。

8. 　　　本會根據業內最新發展，估計各技能等級因退休、轉業或其他原因而流失的人手，並決定採用每年 3%的正常流失率，推算技師、技術員及技工各技能等級的人手流失情況。

9.　　　本會採用調節過濾法，推算 2011 至 2013 年間電子業的人力需求；有關數字見下表。

表 B:　　　電子業 2011 至 2013 年間每年人力需求

技能等級	平均每年須培訓人數	
	總數	幅度(±10%)
技師	742	668 - 816
技術員	1 344	1 209 - 1 478
技工	482	433 - 530

建議

10.　　　本港電子業經歷 2008 年全球金融危機後，已復元得不錯，預料香港經濟會持續增長。然而，人民幣不斷升值、工資上漲、稅項增加，以及能源和原材料價格攀升等因素，均對電子業構成威脅。珠江三角洲勞工短缺則是另一個挑戰。故此，不少廠商計劃將生產線遷至成本較低的國家，如孟加拉。此外，2011 年 3 月 11 日日本廣泛地區發生九級大地震，所引發的巨大海嘯沖毀不少房屋和電子廠。是次災難造成的破壞仍有待確定，但必然會影響全球電子產品市場。同年 3 月，中央政府公布「十二五」規劃；有關政策將帶動內地消費需求，推動城市化發展，亦會為本港企業帶來大量商機。考慮到上述發展，本會持審慎樂觀看法，相信電子業會持續增長。本會建議僱主採取以下措施，應對目前情況與日後挑戰。

(vi)　精簡工作流程，進行業務多元化，加強公司運作成效和效率；

(vii)　開發更多高增值及具成本效益的產品／服務，提升競爭力；

viii)　透過適當培訓，進一步提升員工(尤其是技術人員)的整體技術水平和能力，令機構更具實力和競爭力；

(ix)　繼續以最具成本效益的方式開拓新業務，提高市場佔有率；及

(x)　繼續維繫和加強與重要客戶的伙伴關係，並與潛在客戶建立合作關係。

11.　　　　至於員工的技術和能力水平，本會認為在個別公司的培訓需求之外，調查錄得的「僱員需要加強培訓的技能」對僱主甚有參考價值。在目前的環境，僱主宜加強培訓，以確保商機及挑戰出現之時不乏幹練員工。此外，本會建議職業訓練局及其他培訓機構密切注視上述的電子業培訓需求，適時配合。

12.　　　　本會將於 2012 年進行另一次電子業人力調查，檢討業內人力需求並更新有關數據。

第一章

緒　論

電子業及電訊業訓練委員會

1.1　　　　電子業及電訊業訓練委員會是隸屬職業訓練局的法定委員會，由香港特別行政區政府委任，負責與電子業人力培訓有關事宜。本會委員乃由主要行業公會、專業學會、工會、訓練及教育機構，以及政府部門提名代表出任。本會委員名單及職權範圍分別載於附件甲及乙。

1.2　　　　本會按職權規定，負責確定電子業的人力需求，並向職業訓練局提出建議，以發展專業教育及培訓設施，應付有關需要。

人力調查

1.3　　　　本會於2010年4月，為電子業進行人力調查，蒐集最新資料。是次調查在政府統計處協助下進行，實地調查後的跟進工作於2010年10月完成，並於同月內完成數據處理。

1.4　　　　是次調查蒐集到下列人力統計數據及資料：

　　　(i)　　調查期間各主要職務的僱員人數；

　　　(ii)　　現有空缺額；

　　　(iii)　　受訓僱員人數；

　　　(iv)　　僱主預測 2011 年 4 月時的僱員總數；

　　　(v)　　僱員平均每月收入；及

　　　(vi)　　僱主認為僱員宜有的教育程度、訓練方式及訓練期。

1.5　　　　本會亦請僱主填報調查進行前12個月內，獲得晉升或派往香港以外地區工作超過6個月的技師、技術員及技工人數，以及僱員最需要加強培訓的技能。

調查範圍

1.6   是次調查包括以下 6 類公司、政府有關部門及教育機構：

第一類：製造

下列產品的製造商：

(a) 電腦及周邊設備 (HSIC 262000, 281700, 952100)；

(b) 影音器材 (HSIC 264000, 953100)；

(c) 通訊設備及電纜 (HSIC 263000, 273100, 952200)；

(d) 磁性及光學媒體、已儲錄資料媒體的複製 (HSIC 182000, 268000)；

(e) 電腦及電訊設備用電子零件與組件 (HSIC 261100)；

(f) 其他電子零件及組件 (HSIC 261900)；

(g) 電子遊戲用品及玩具 (HSIC 324500)；

(h) 工業用電子儀器及量度、檢驗、導航與控制用設備 (HSIC 265100, 331300)。

第二類：貿易及服務

(a) 防盜系統與閉路通訊系統安裝及保養公司 (HSIC 432104, 432105)；

(b) 下列產品的進出口貿易公司：

(i) 科學及專業儀器 (HSIC 451631, 452631)*；

(ii) 電訊設備及零件 (HSIC 451611, 452611)*；

(iii) 電器 (HSIC 451452, 452452)*；

(iv) 電腦、電腦周邊設備及套裝軟件 (HSIC 451601, 451602, 452601, 452602)*；

(v) 辦公室器材及設備 (HSIC 451634, 452634)*；

(c) 資料處理、寄存及相關活動公司 (HSIC 620101, 620199, 620200, 620900, 631100)*；

(d) (a)至(c)以外的其他電子工程服務公司。
(附錄 A)

第三類：電訊服務

提供下列服務的公司：

(a) 電訊網絡營運服務公司 (HSIC 611000)；

(b) 其他雜項電訊(HSIC 619900)；

(c) 互聯網接駁服務(HSIC 619100)；

(d) 電台廣播，電影、錄像及電視節目編製與廣播活動(HSIC 591100, 601000, 602000)。

第四類：批發

下列批發公司：

(a) 電訊設備及零件(HSIC 460611)；

(b) 電器（不包括機械、辦公室及電訊設備及器材）(HSIC 460452)；

(c) 電腦及電腦周邊設備(HSIC 460601, 460602)；及

(d) 辦公室器材及設備（不包括電腦、傢具及固定裝置）(HSIC 460634)。

第五類：設計公司、有關大學院系及政府部門

(a) 電子設計公司；

(b) 有關教育機構；

(c) 有關政府部門。

第六類：零售(7間大型電子產品零售公司)

附註：(1) HSIC — 香港標準行業分類

*(2) *不包括僱用 10 名以下職員的機構，因這些機構技術人員不多。*

1.7 調查前，政府統計處錄得香港電子業 6 大門類約共有 5 868 間機構。鑑於資源有限，本會採用分層隨機抽樣方法，選出共 694 間機構為調查對象。調查所得資料其後以統計方法倍大，以反映業內的整體人力情況。

調查方法

1.8 實地調查進行前兩星期，本會將有關調查文件，包括調查表(附件丁)、附註(附件戊)及主要職務工作說明（附件己）寄予選出的694間機構。本會亦透過本地報章，以及向有關行業組織宣傳，促請僱主合作。

1.9 實地調查期間，政府統計處派員到全部 694 間機構收回填妥的調查表，並於有需要時，協助僱主填寫表格。收回的調查表均經詳細審核，如有需要，會與填覆機構核對。

調查反應

1.10　　694間經選出的機構中，395間填覆調查表，30間拒絕作答，而其餘269間，則已搬遷、結業、未能聯絡，或已轉營他業。是次調查的實際填覆率為92.4%。

1.11　　部分機構只提供粗略的資料，並無詳細列出調查進行時的僱員每月收入、受訓者數目和空缺數目，原因是業務繁忙和不願披露機構的機密資料。

調查報告

1.12　　本會在跟進實地調查及處理數據後，於2010年11月編製統計報告，列載調查蒐集所得的重要人力數據。統計報告其後上載職業訓練局網站，以便公眾人士參考。

1.13　　本報告書詳載是次調查結果、本會對業內的培訓需求預測，以及針對這些需求所提出的建議。報告書內，「僱員」、「從業員」及「人力」均指調查期間業內各主要職務的僱員總數，但不包括受訓者及學徒。「受訓者」指正在接受各種形式訓練的人士，包括已簽署學徒合約的註冊學徒。

第二章

調查結果摘要

僱員人數

2.1 是次調查顯示，2010年4月時，本港電子業共僱用128 854人，其中52 115人擔任電子工程及相關範疇的主要職務。下列各段只列載從事主要職務僱員的人力統計數字。

各類機構各技能等級的僱員分布情況

2.2 電子業各類機構各技能等級的僱員分布情況見表 2.1 及圖 2.1、2.2。

表 2.1： 各類機構各技能等級的僱員分布情況

門類	技能等級				總數 (佔僱員總數百分率)
	技師	技術員	技工	操作工	
13.製造	998	2 283	1 166	2 559	**7 006 (13.4%)**
14.貿易及服務	7 428	15 441	3 767	593	**27 229 (52.2%)**
15.電訊服務	2 212	4 441	945	144	**7 742 (14.9%)**
16.批發	314	1 663	572	50	**2 599 (5.0%)**
17.設計公司、有關大學院系及政府部門	874	2 363	1 083	135	**4 455 (8.6%)**
18.零售(7 間大型電子產品公司)	7	3 077	-	-	**3 084 (5.9%)**
總數 (佔僱員總數百分率)	**11 833 22.7%**	**29 268 56.2%**	**7 533 14.5%**	**3 481 6.6%**	**52 115 100%**

圖 2.1 ： 　各 技 能 等 級 的 僱 員 分 布 情 況

操作工
6.6%

技工
14.5%

技師
22.7%

技術員

圖 2.2 ： 　各 類 機 構 的 僱 員 分 布 情 況

電訊服務
14.9%

貿易及服務
52.2%

批發
5.0%

設計公司、有關大學院
系及政府部門
8.6%

製造
13.4%

零售(7間大型電子
產品公司)
5.9%
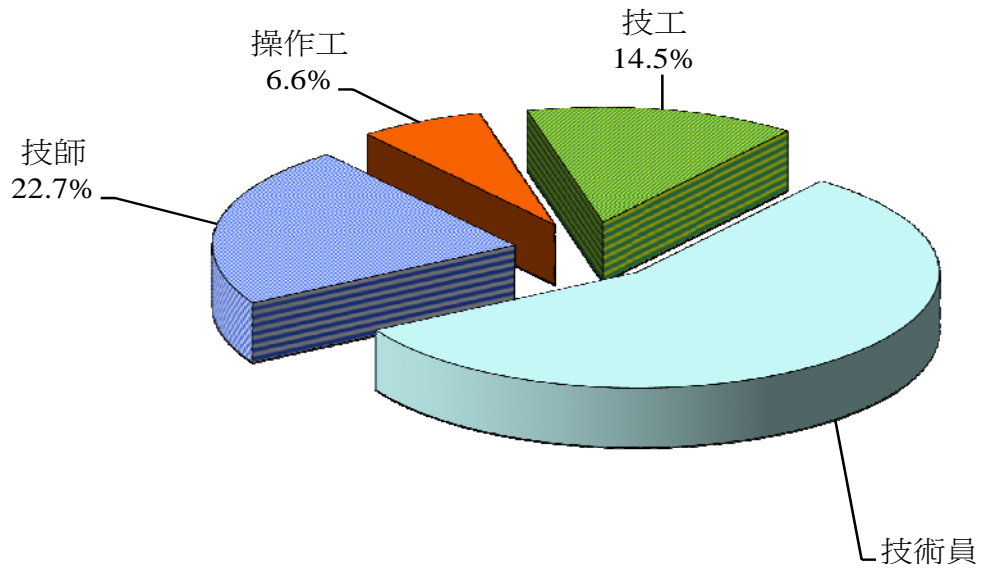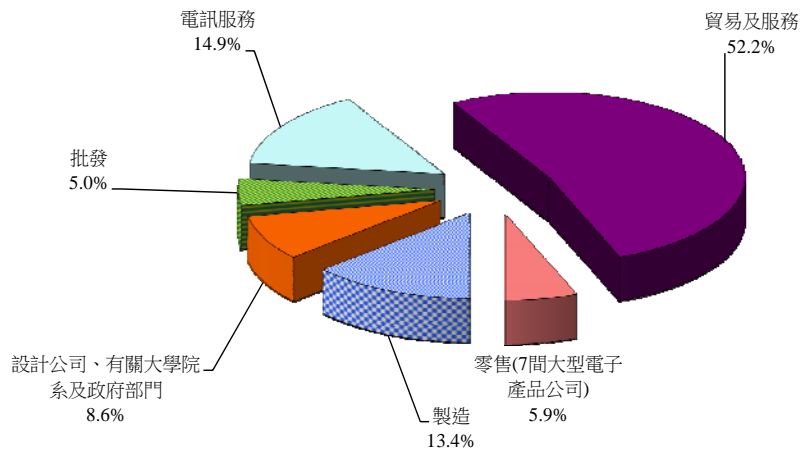
受訓者人數

2.3 調查期間，業內共有 288 名受訓者，按技能等級的分布情況如下：

<p style="text-align: center;">表 2.2： 各技能等級的受訓者分布情況</p>

技能等級	受訓者人數 (a)	僱員人數 (b)	百分率 $\frac{(a)}{(b)}$ x100%
技師	47	11 833	0.4%
技術員	69	29 268	0.2%
技工	157	7 533	2.1%
操作工	15	3 481	0.4%
總數	**288**	**52 115**	**0.6%**

調查期間空缺數目及
預測至 2011 年 4 月時的人力

2.4 調查期間，電子業有846個空缺，佔僱員總數的1.62%。僱主亦預測2011年4月時共有53 258名僱員，較2010年4月增加1 143名(1.1%)。

2.5 調查期間的人力需求，亦與僱主預測至 2011 年 4 月時的僱員人數作比較，數字載於表 2.3 及圖 2.3：

<p style="text-align: center;">表 2.3： 2010 年 4 月與 2011 年 4 月的人
力需求比較</p>

技能等級	調查期間(2010 年 4 月)			預測至 2011 年 4 月時的僱 員總數	預測人力 需求增減
	僱員 人數	空缺 數目	總人力 需求		
技師	11 833	290	12 123	12 170	+0.4%
技術員	29 268	447	29 337	29 820	+1.6%
技工	7 533	86	7 690	7 788	+1.3%
操作工	3 481	23	3 496	3 480	-0.5%
總數	**52 115**	**846**	**52 646**	**53 258**	**+1.1%**

圖 2.3： 2010 年 4 月與 2011 年 4 月的人
力需求比較

人力需求
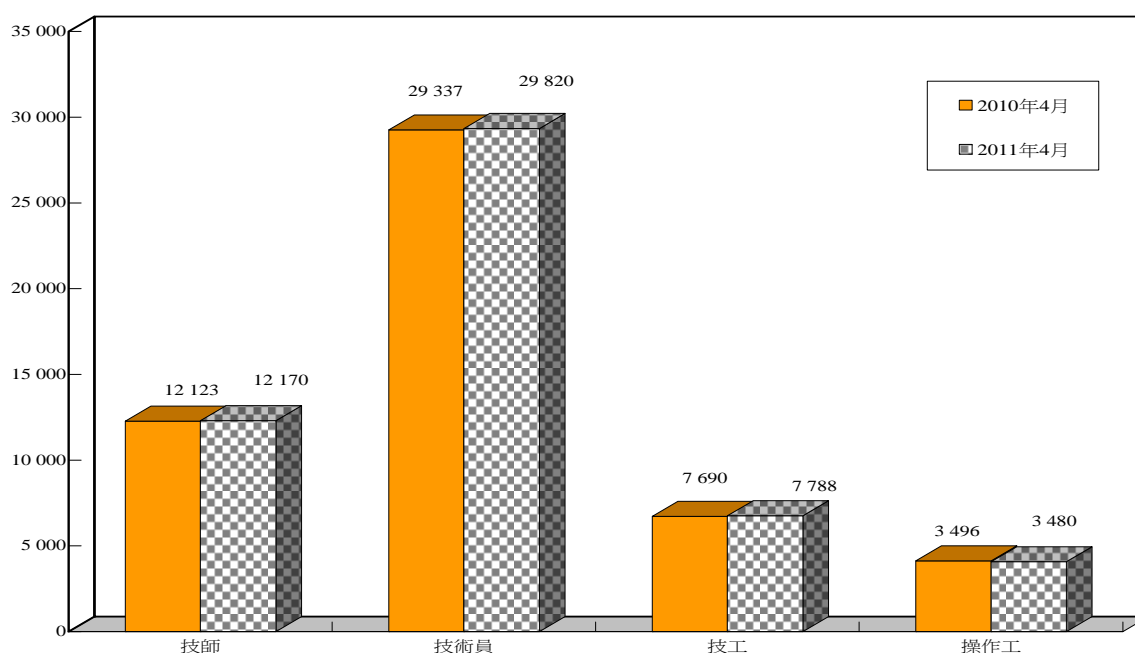
僱員每月總收入幅度

2.6 電子業僱員每月總收入幅度劃分的分布情況，見表 2.4 及圖 2.4：

表 2.4： 僱員每月總收入幅度劃分的
分布情況

技能等級	$6,001 以下	$6,001- $8,000	$8,001- $10,000	$10,001- $15,000	$15,001- $20,000	$20,001- $25,000	$25,001- $30,000	$30,000 以上	未有 說明
技師	-	-	-	468	1 997	2 150	2 095	1 541	3 582
技術員	1	411	1 482	7 629	6 767	3 505	1 158	640	7 675
技工	114	666	2 269	3 514	126	-	-	-	844
操作工	114	1 062	689	2	-	-	-	-	1 614
總數	**229**	**2 139**	**4 440**	**11 613**	**8 890**	**5 655**	**3 253**	**2 181**	**13 715**

圖 2.4：　　　僱員每月總收入幅度劃分的
　　　　　　　分布情況

僱員人數
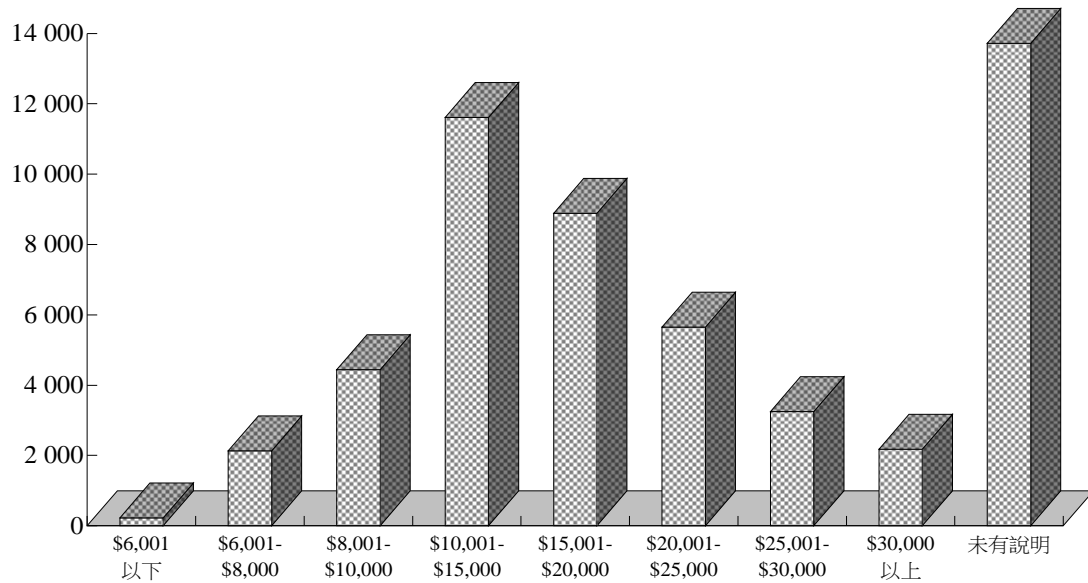
僱員宜有的教育程度、訓練模式及訓練期

2.7　　　　大部分僱主認為技師、技術員及技工級僱員宜有的教育程度、訓練模式及訓練期如下：

表 2.5：　　僱員宜有的教育程度、訓練模式及
　　　　　　訓練期

技能等級	宜有教育程度	宜有訓練模式	宜有訓練期
技師	大學學位／院士或同等學歷	在職訓練	3 至 4 年
技術員	副學士／高級文憑	在職訓練	3 至 4 年
技工	技工證書	在職訓練	1 至 2 年

內部晉升情況

2.8　　　調查之前 12 個月內，電子業共有 451 名僱員獲內部晉升，擔任較高技能等級職務，其分布情況如下：

<p align="center">表 2.6：　內部晉升</p>

內部晉升	獲晉升 僱員人數 (a)	晉升職級的 僱員總數 (b)	百分率 $\frac{(a)}{(b)}$ x100%
由技術員 晉升至技師	204	11 833	1.7%
由技工 晉升至技術員	239	29 268	0.8%
由其他技能等級 晉升至技工	8	7 533	0.1%
總數	**451**	**48 634**	**0.9%**

派駐香港以外地區工作的僱員

2.9　　　僱主填覆，調查前的 12 個月內，曾在香港以外地區工作超過 6 個月的僱員人數如下：

<p align="center">表 2.7：　曾在香港以外地區工作的僱員人數</p>

技能等級	曾在香港 以外地區工作 的僱員人數 (a)	同一技能等級 的僱員總數 (b)	百分率 $\frac{(a)}{(b)}$ x100%
技師	1 252	11 833	10.6%
技術員	1 094	29 268	3.7%
技工	1	7 533	0.01%
總數	**2 347**	**48 634**	**4.8%**

僱員最需要加強培訓的技能

2.10　　　機構認為現有僱員最需要加強培訓的 3 項技能如下：

表 2.8：　僱員最需要加強培訓的技能

| 技能等級 | 僱員最需要加強培訓的 3 項技能 | | | |
	次序	編號	技能／知識／個人特質	僱員人數
技師	1.	401	解決問題	2 836
	2.	103	計劃管理	2 130
	3.	413	學習或適應新技能、新知識的能力	1 915
技術員	1.	411	客戶服務技巧	9 853
	2.	401	解決問題	7 420
	3.	413	學習或適應新技能、新知識的能力	6 905
技工	1.	401	解決問題	2 812
	2.	413	學習或適應新技能、新知識的能力	1 538
	3.	404	溝通技巧	1 189

統計表

2.11　　　電子業各類機構各主要職務的詳細人力統計數字分析載於附錄 1 至 7。僱員每月收入幅度劃分的分布情況見附錄 8，而現有僱員最需要加強培訓的技能則見附錄 9。

第三章

結　論

3.1　　　　本會已仔細審視調查結果，認為有關數據大致能反映調查期間業內的就業情況。

3.2　　　　本業擔任電子及相關範疇主要職務的僱員總數每年增加1.1%，由2008年的50 960人增至2010年的52 115人；不過，若撇除新增的門類六的僱員（3 084人），電子業的僱員總數每年僅微增1.0%，由2008年的48 079人增至2010年的49 031人。以下各段會按門類及技能等級詳細分析業界的人力變化。由於門類二（貿易及服務）及門類四（批發）的業務及人力性質相似，在比較和分析人力情況時，兩者將會合併考慮；又由於門類六只有7間大型電子產品零售公司的人力納入是次調查範圍內，而且有關安排僅屬第二次，對該門類的調查未夠全面；因此，為更適當地直接比較各門類的人力情況，門類六並不包括在內。表3.1按技能等級及門類，扼要列出電子業在2010年及2008年的人力分布及變化。

表 3.1：　各技能等級及門類 2010 年與 2008 年的人力情況比較
（括弧內為 2008 年數據）

技能等級	門類一 製造	門類二及四 貿易、服務 及批發	門類三 電訊服務	門類五 設計公司、有關 大學院系及政 府部門	總數	按年 變化
技師	998 (836)	7 742 (8 375)	2 212 (1 871)	874 (822)	11 826 (11 904)	**-0.3%**
技術員	2 283 (2 020)	17 104 (16 776)	4 441 (4 625)	2 363 (2 303)	26 458 (25 724)	**+1.4%**
技工	1 166 (683)	4 339 (3 878)	945 (814)	1 083 (1 056)	7 533 (6 431)	**+8.2%**
操作工	2 559 (2 882)	643 (878)	144 (113)	135 (147)	3 481 (4 020)	**-7.0%**
總數	7 006 (6 421)	29 828 (29 907)	7 742 (7 423)	4 455 (4 328)	49 031 (48 079)	**+1.0%**
按年變化	**+4.5%**	**-0.1%**	**+2.1%**	**+1.5%**	**+1.0%**	

3.3 　　　　圖3.1 顯示2002至2010年間電子業各類機構的人力變化，並反映電子業的人力調查範圍大幅修訂以後，業界在過去幾年的人力變化。

圖 3.1： 　　2002 至 2010 年間各門類
的人力變化

僱員人數
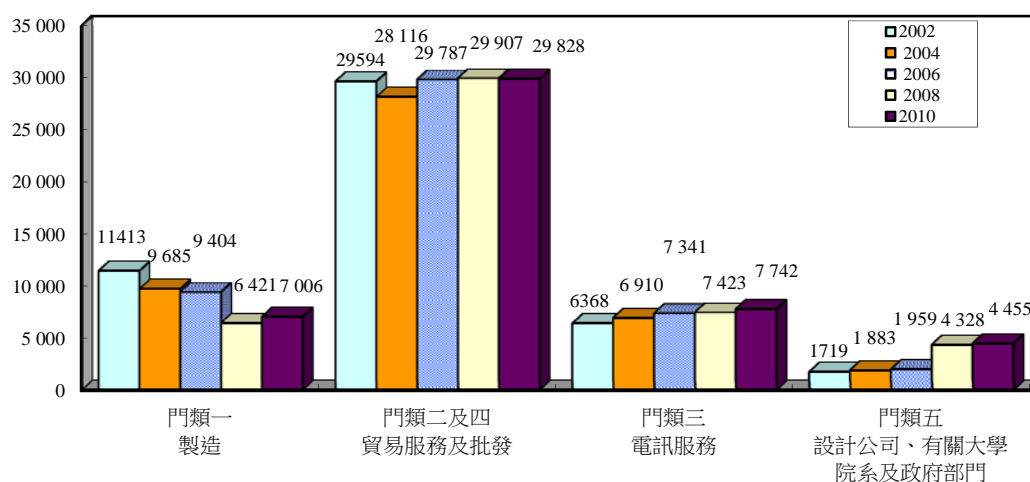
各門類的人力變化

3.4 　　　　根據表3.1所示，電子業在過去兩年的僱員總數僅增加952人，即1.0%。門類一（製造）每年錄得4.5%的增幅；門類二及門類四（貿易、服務及批發），則每年錄得0.1%輕微跌幅。另一方面，門類三（電訊服務）及門類五（設計公司及政府部門）的僱員人數分別錄得每年2.1%和1.5%輕微增長。

3.5 　　　　各門類的人力變化原因如下：

(xiii) 　門類一僱員人數每年增加，主因是各國經歷 2008 年全球金融危機後，經濟普遍開始復甦，消費者對各種電子產品的需求再次湧現；

(xiv) 　門類二及四人手輕微減少，顯示這兩個門類對資本電子設備和系統，以及資料處理和圖表編製服務的需求趨於穩定；

(xv) 門類三人手每年續有溫和增長,反映此門類仍為香港主要基礎建設之一,並繼續為市民推出新服務;及

(xvi) 門類五人手輕微增加,主要是此門類對電子產品設計人才續有需求,以及集成電路設計業務穩步發展所致。

各門類的人力變化

3.6　　各技能等級 2002 至 2010 年間的人力變化見圖 3.2:

圖 3.2: 　各技能等級 2002 至 2010 年間的人力變化

僱員人數
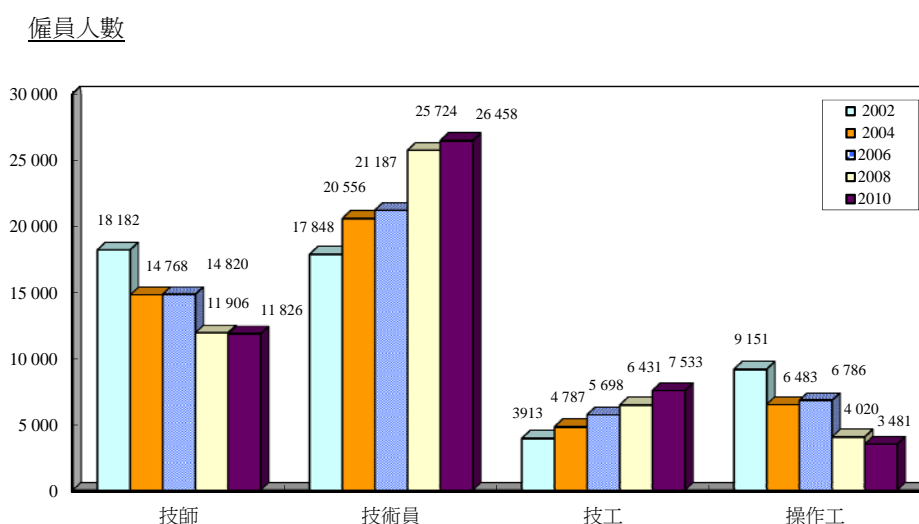
3.7　　圖 3.2 顯示,技師和操作工的人數持續減少,相反技術員和技工則不斷增加。調查亦發現,2008 至 2010 年間,技師人數輕微減少,但業內對技術員及技工的需求卻持續。各技能等級的人力變化,原因如下:

(iv) 技師人數每年輕微減少 0.3%,可能是由於過去兩年,為適應電子業門類二機構的營商環境,技師和技術員的薪酬水平不斷調整。這段期間,機構通常聘請較多技術員,代替被裁或退休的技師。技師人數於門類一、三、五有所增加,原因是業內對電子產品設計人才續有需求,並需要掌握高技術的僱員來配合集成電路設計業務的發展,以及提供嶄新的電訊服務。

(v) 技術員人數每年增加 1.3%，可歸因於上文(i)所述原因，以及門類五的業務增長。此外，調查又發現，新增的門類六（7 間大型電子產品零售公司）共僱用 3084 名推銷技術員（按年增幅 3.5%）；及

(vi) 技工人數每年增加 8.2%，主要原因是門類一、三、五的業務有所增長。

業務前景

行業整體

3.8　　　電子業仍是香港賺取最大利潤的商品出口行業，主因是內地對外加工生產業務迅速擴張，以及歐美消費者對多種電子產品的需求再次湧現。2010 年，電子產品的出口總值較上一年颷升 28%，達 16,909.49 億港元。2006 至 2010 年間電子產品的出口貨值詳見表 3.2 及圖 3.3。

表 3.2：　　電子產品出口貨值

電子產品	貨值(百萬港元)				
	2006	2007	2008	2009	2010
本地出口	36 585	21 389	18 666	15 022	17 156
轉口	1 177 932	1 327 958	1 420 489	1 305 236	1 673 793
總出口	1 214 517	1 349 347	1 439 155	1 320 258	1 690 949

資料來源 ： 政府統計處《香港對外商品貿易統計》

圖 3.3：　　電子產品出口貨值
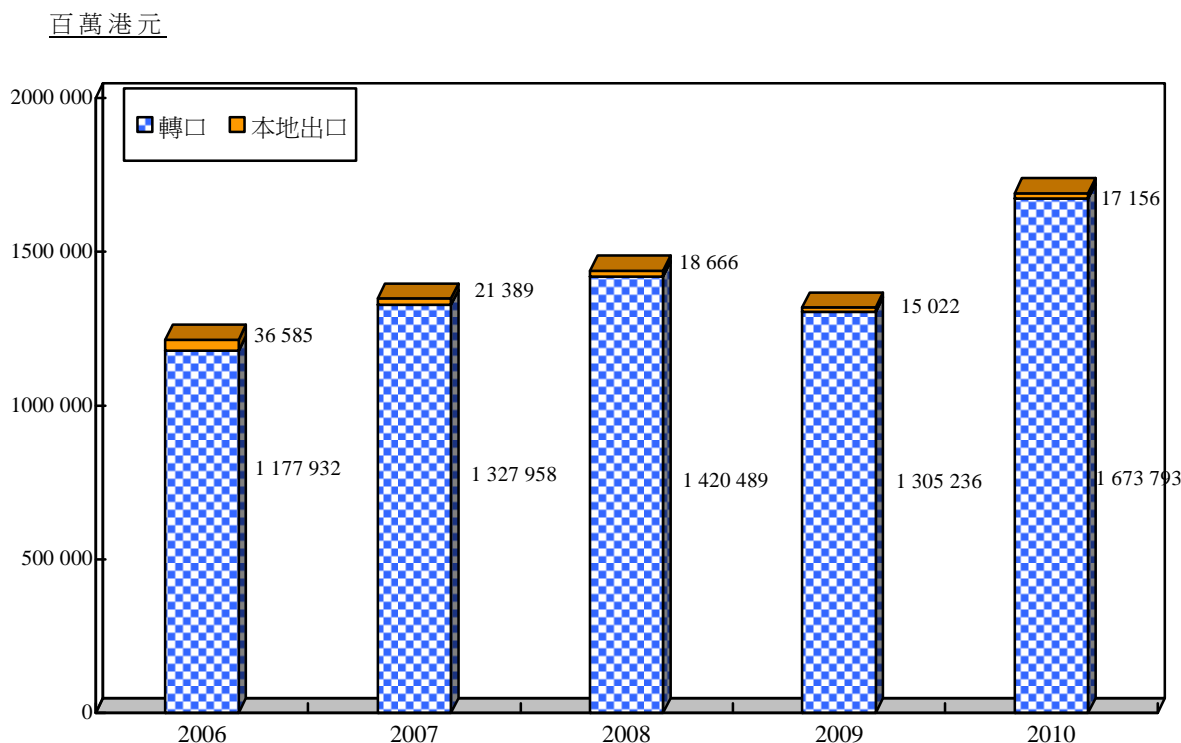
3.9　　　自從 2010 年 5 月實施第七階段《內地與香港關於建立更緊密經貿關係的安排》（CEPA VII）以來，香港一直享受零關稅優惠；中央政府更於 2011 年 3 月公布「十二五」規劃，內地市場開放，將進一步給予香港企業不少商機。

3.10　　　本港電子業經歷 2008 年全球金融危機後，已復元得不錯。然而，內地實施「勞動合同法」和「加工貿易政策」，影響企業的營運成本。同時要求符合環保及安全規定的呼聲日增，導致中國及其他國家的環境法規不斷收緊，其中包括中國強制性產品認證 (CCC)、《廢棄電器及電子設備指令》（WEEE）及《限制電器及電子設備使用有害物質指令》（RoHS），令到門類一（製造）在過去數年承受巨大壓力，預期這情況在未來數年將會持續。

3.11　　　人民幣不斷升值、工資上漲、稅項增加，以及能源和原材料價格上升，會使營運成本繼續居高不下。此外，珠江三角洲出現勞工短缺，則是另一個挑戰。另一方面，除內地企業外，亞洲其他地區的製造商，一直都是香港電子製造業的強勁對手

3.12　　香港依舊是零部件及高檔次消費性電子產品的熱門採購中心。由於內地的汽車產量不斷增加，汽車音響器材及相關產品，以及汽車的電子零件，需求將會日增。另一方面，發光二極管（LED）輕巧纖細，耐用節能，兼且容易調控，因而用途廣泛，如用於道路標誌、告示板、照明設備和顯示器。至於另一類發光二極管 AMOLED (active-matrix organic light emitting diode)，則會在未來幾年廣泛應用於流動裝置及電視的顯示屏上。

3.13　　預料本港經濟將持續增長，令業務性質相近的門類二（貿易及服務）、門類四（批發）及新增的門類六（電子產品零售公司）受惠。至於門類三（電訊服務），則會相當穩定，繼續為公眾提供嶄新的電訊服務。

3.14　　本會認為，門類五中的設計公司會繼續開發產品，以配合業內最新的科技發展，保持在市場的競爭力。另一方面，製造業仍會因集成電路設計而獲益。由於本港備有完善的保護知識產權法例和措施，加上業界的設計經驗豐富，信譽昭著，集成電路設計業日後將持續發展。

3.15　　2011 年 3 月 11 日，日本廣泛地區受到該國歷來最猛烈的九級大地震襲擊；所引發的巨大海嘯沖毀了日本東岸大量房屋及汽車。地震亦破壞區內兩所核電廠，以及不少半導體工廠和電子廠。是次災難造成的人命傷亡及經濟損失，以及對電子業的影響，仍有待確定，但預料損失會十分鉅大。由於日本是全球電子業重要供應商之一，提供電子設備、半導體、大型液晶體顯示屏、動態隨機存取記憶體 (DRAMs)、NAND 快閃記憶體及其他有關零部件，本會相信各地的半導體供應和消費電子產品業務會大受影響。

產品趨勢

3.16　　蘋果公司的 iPad 於 2010 年 4 月推出以來，一直在全球暢銷。這種平板個人電腦擁有以下特別功能：大型多點觸控液晶體(LCD)熒幕、Wi-Fi(無線上網、無線局域網)、3G 高速下載分組接入(High Speed Download Packet Access)及錄音；亦是多媒體平台，可供書本、雜誌、音樂、網頁內容、影片及遊戲使用。iPad 在個人電腦市場帶動的熱潮，令多家電子公司設計了相近的產品。由於平板個人電腦在全球大受歡迎，估計不久便會取代銷量不斷下跌的小型筆記簿電腦(netbook)。另一方面，功能更強勁的筆記簿型電腦(notebook)，如具有高速無線連接、節能、USB 3.0 連接埠、多媒體、多點觸控 LED 熒幕、視像會議、全球定位系統(GPS)及雲端運算等，將會是發展大趨勢；預料未來幾年對這類產品的需求會增加。此外，USB隨身碟(USB flash drive)、網絡攝影機、揚聲器、掃描器及打印機等一般電腦周邊設備，需求仍會極大；部分產品更採用新奇設計，以爭取更大市場份額。

3.17　　　隨着寬頻上網服務迅速發展,「隨時隨地無線接駁」已經成為時下流動上網裝置(如智能電話)必備的無線應用功能。除常見的 MP3、錄音、收音機及高解晰度攝影,這些裝置亦提供影片播放、全球定位系統(GPS)、視像會議及上網等特別功能。應用程式便覽 (APPS) 服務推出後,大眾對這類裝置更為受落;預料用家對有關服務的需求極為殷切。基於此,不少電子產品公司已設計多種智能電話,配以不同的操作系統及功能,藉此增加市場份額。功能及介面更先進、傳輸更快更大量的智能電話,需求會持續增加。

3.18　　　至於消費性電子產品,尤其是視聽器材,發展趨勢仍以可攜性及數碼匯流為本。具有增強功能(如三維效果)的數碼攝錄機及數碼相機尤其熱賣。不過,具備高清晰度同時較低價的簡化版數碼單鏡反光相機卻愈來愈受歡迎。隨着電子出版迅速發展,裝有收音機、數碼錄音及 MP3(MPEG-2 Audio Layer III)等額外功能的電子書閱讀器的需求會有所增加。另一重要市場是家庭／個人多媒體娛樂,藍光光碟(Blu-ray DVD)播放機及錄影機在未來幾年,會逐步取代 DVD 播放機及錄影機。

3.19　　　自從數碼電視廣播服務於 2007 年 12 月 31 日推出以來,覆蓋範圍已遍及整個香港,而服務亦極為市民接受。高清晰度電視(HDTV)機頂盒及數碼電視機預期在未來數年仍有殷切需求。裝有大型 LED-背光 LCD 或 AMOLED 顯示屏,以及內置三維效果、上網及錄音功能(配合更多娛樂及日後商業活動用途)的高清晰度數碼電視,會深受消費者歡迎。此外,流動電視正在發展,相信日後會成為熱門的娛樂產品。數碼聲音廣播(DAB)服務將於 2012 年年中推出,數碼收音機亦會成為市場上另一焦點產品。LTE(Long Term Evolution) 及 WiMAX (Worldwide Interoperability for Microwave Access)則可能成為未來 4G (第 4 代)流動電話通訊採用的科技。

3.20　　　至於其他流行產品,如健康護理電子產品、長壽電池(尤其用於環保汽車者),以及節能的 LED 照明設備,預料需求會增加。另一方面,具備上網及多點觸控高清晰度熒幕等受歡迎功能的新穎電子遊戲機源源不絕應市,以滿足青少年和成年人對電子玩具及遊戲的需求。

未來人力需求

3.21　　　根據人力趨勢、電子業業務前景,以及僱主對未來人力需求的預測,本會相信未來幾年,業界繼續需要幹練的技師、技術員及技工,以維持行業發展;惟對操作工(製造)的需求則有限。

3.22 本會根據業內最新發展，估計各技能等級因退休、轉業或其他原因而流失的人手，並決定採用每年 3%的正常流失率，推算技師、技術員及技工各技能等級的人手流失情況。

3.23 本會採用調節過濾人力預測法，推算 2011 至 2013 年間電子業的人力需求；有關數字見下表 3.3。按主要職務劃分的培訓需求則載於附錄 10。

表 3.3： 電子業 2011 至 2013 年間每年人力

技能等級	平均每年須培訓人數	
	總數	幅度(±10%)
技師	742	668 - 816
技術員	1 344	1 209 - 1 478
技工	482	433 - 530

3.24 本會將於 2012 年進行另一次電子業人力調查，以檢討行業的人力需求和更新有關數據。

第四章

建　議

4.1　　　本港電子業經歷 2008 年全球金融危機後，已復元得不錯，預料香港經濟會持續增長。然而，人民幣不斷升值、工資上漲、稅項增加，以及能源和原材料價格攀升等因素，均對電子業構成威脅。珠江三角洲勞工短缺則是另一個挑戰。故此，不少廠商計劃將生產線遷至成本較低的國家，如孟加拉。此外，2011 年 3 月 11 日日本廣泛地區發生九級大地震，所引發的巨大海嘯沖毀不少房屋和電子廠。是次災難造成的破壞仍有待確定，但必然會影響全球電子產品市場。同年 3 月，中央政府公布「十二五」規劃；有關政策將帶動內地消費需求，推動城市化發展，亦會為本港企業帶來大量商機。考慮到上述發展，本會持審慎樂觀看法，相信電子業會持續增長。本會建議僱主採取以下措施，應對目前情況與日後挑戰。

(i)　　精簡工作流程，進行業務多元化，加強公司運作成效和效率；

(ii)　　開發更多高增值及具成本效益的產品／服務，提升競爭力；

(iii)　　透過適當培訓，進一步提升員工(尤其是技術人員)的整體技術水平和能力，令機構更具實力和競爭力；

(iv)　　繼續以最具成本效益的方式開拓新業務，提高市場佔有率；及

(v)　　繼續維繫和加強與重要客戶的伙伴關係，並與潛在客戶建立合作關係。

4.2　　　至於員工的技術和能力水平，本會認為在個別公司的培訓需求之外，附錄9列載的「僱員需要加強培訓的技能」甚宜僱主參考。在目前的環境，僱主宜加強培訓，以確保商機及挑戰出現之時不乏幹練員工。此外，本會建議職業訓練局及其他培訓機構密切注視上述的電子業培訓需求，適時配合。

每年受訓人數

4.3　　　在調查期間，技師、技術員及技工級的受訓者分別只有 47 人、69 人和 157 人。由於培訓技師通常需時 2 至 4 年，培訓技術員或技工則需要 3 至 4 年，目前僱主提供的培訓，明顯未敷行業需求。

4.4　　　本會建議，整個行業於 2011 至 2013 年以第 3.23 段所述的規模推行培訓計劃。各主要職務的培訓需求載於附錄 10。僱主為機構策劃人力時，應留意平均每年須受訓的人數，按現有的人手計算，分別約佔現職技師、技術員及技工總數的 6.3%, 4.6% 和 6.4%。

4.5　　　下文概述技師、技術員及技工的建議培訓途徑。

技師訓練

4.6　　　技師須具備相當於專業學會正式會員所需的學歷和經驗，且能夠分析和解決各種技術問題。此外，技師亦須負責發展及應用工程原理，具創見和判斷力，緊貼行業的科技發展，採用最新技術，並督導和培訓下屬。

4.7　　　在改善管理和革新科技方面，技師肩負重任。本會建議循以下途徑訓練技師：

<div align="center">圖 4.1：　技師訓練</div>

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┌─────────────────────────────────┐
│  修畢相關學位課程，符合認可專業學會  │
│       正式會員的學歷規定          │
└─────────────────────────────────┘
                 │
                 ▼
    ┌───────────────────────────┐
    │    最少2年有系統的在職訓練    │
    └───────────────────────────┘
                 │
                 ▼
    ┌───────────────────────────┐
    │   最少2年擔任要職的工作經驗   │
    └───────────────────────────┘
                 │
                 ▼
           ┌──────────┐
           │   技師    │
           └──────────┘
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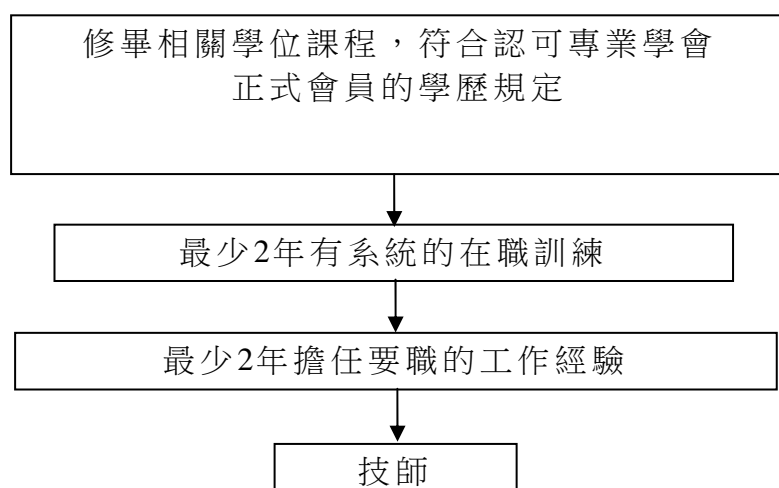
4.8　　　大學教育資助委員會（下稱「教資會」）資助的多所本地院校，均有開辦各類電子工程及相關學科的學位課程。下表列出這些全日制工程科學位課程在2011/12及2012/13年度的畢業生預計人數：

表 4.1： 預計教資會院校畢業生人數

全日制學位課程	預計畢業生人數	
	2011/12	2012/13
電子工程	242	207
電腦工程	164	185
資訊工程	199	197
電子及通訊工程	129	143
電子及資訊工程	140	121
資訊及通訊工程	17	34
互聯網及多媒體科技	43	38
系統工程及工程管理	93	89
總數	1 027	1 014

4.9　　　　預測未來三年，業界每年約須招聘 58 至 714 名有關的技師級人員（電子工程師、製造／品質保證工程師及系統分析員）。電子工程及相關學科的畢業生人數應可滿足預測需求。這些畢業生普遍亦會在其他如機電工程、資訊科技及製造行業，從事電子工程及相關工作。

工科畢業生訓練計劃(EGTS)

4.10　　　　為了讓工程科畢業生在本地行業更有系統地實習，職業訓練局轄下技師訓練委員會正推行一項資助訓練計劃－工科畢業生訓練計劃（Engineering Graduate Training Scheme, EGTS），向工科畢業生提供 18 個月的實習訓練，程度符合香港工程師學會正式會員的資格要求。受訓者可經由僱主獲得薪金津貼，而實習進度則由技師訓練委員會負責監察。

新科技培訓計劃（NTTS）

4.11　　　　自 1992 年起，職業訓練局一直開辦「新科技培訓計劃」（New Technology Training Scheme, NTTS），為有意讓員工接受新科技培訓的本地公司提供協助，冀能有利業務發展。就是項計劃而言，「新科技」指未在香港廣泛應用的科技，而吸納和應用這些科技有助本港工商業發展。本地僱主如欲引進新科技作工商業用途，可申請計劃的訓練津貼。本會鼓勵僱主充分利用是項計劃。

技術員訓練

4.12　　技術員乃指職級介乎技師與技工之間的從業員,以其學歷、訓練和實務經驗,應能運用已確立的方法來解決技術問題;此外,一般能在技師督導下,肩負技術責任。技術員的訓練途徑見圖4.2。

圖 4.2:　技術員訓練


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┌──────────────────────┐   ┌──────────────┐
│修畢中五,並在香港中學會考取得│   │修畢高中三年級,│
│      所需科目及格      │   │並在所需科目考取│
│                      │   │  2 級成績   │
└──────────────────────┘   └──────────────┘

 (A)          (B)           (C)           (D)
┌────────┐ ┌────────┐  ┌────────┐  ┌────────┐
│完成4年   │ │修畢相關的 │  │修畢相關的 │  │        │
│技術員學徒 │ │全日制技術員│  │全日制    │  │合格技工  │
│訓練,並修讀│ │課程(如:高級│  │中專教育文憑│  │        │
│相關的兼讀制│ │文憑)    │  │課程     │  │        │
│技術員課程 │ └────────┘  └────────┘  └────────┘
└────────┘
             ┌────────┐  ┌────────┐  ┌────────┐
             │最少 2 年 │  │完成3年   │  │進修夜間制技│
             │有系統的  │  │技術員學徒訓│  │術員預修課程│
             │在職訓練  │  │練,並修讀相│  │,繼而修讀相│
             └────────┘  │關的兼讀制技│  │關的技術員課│
                         │術員課程   │  │程,並具備相│
                         └────────┘  │關工作經驗 │
                                      └────────┘
                    ┌────────┐
                    │ 技術員  │
                    └────────┘
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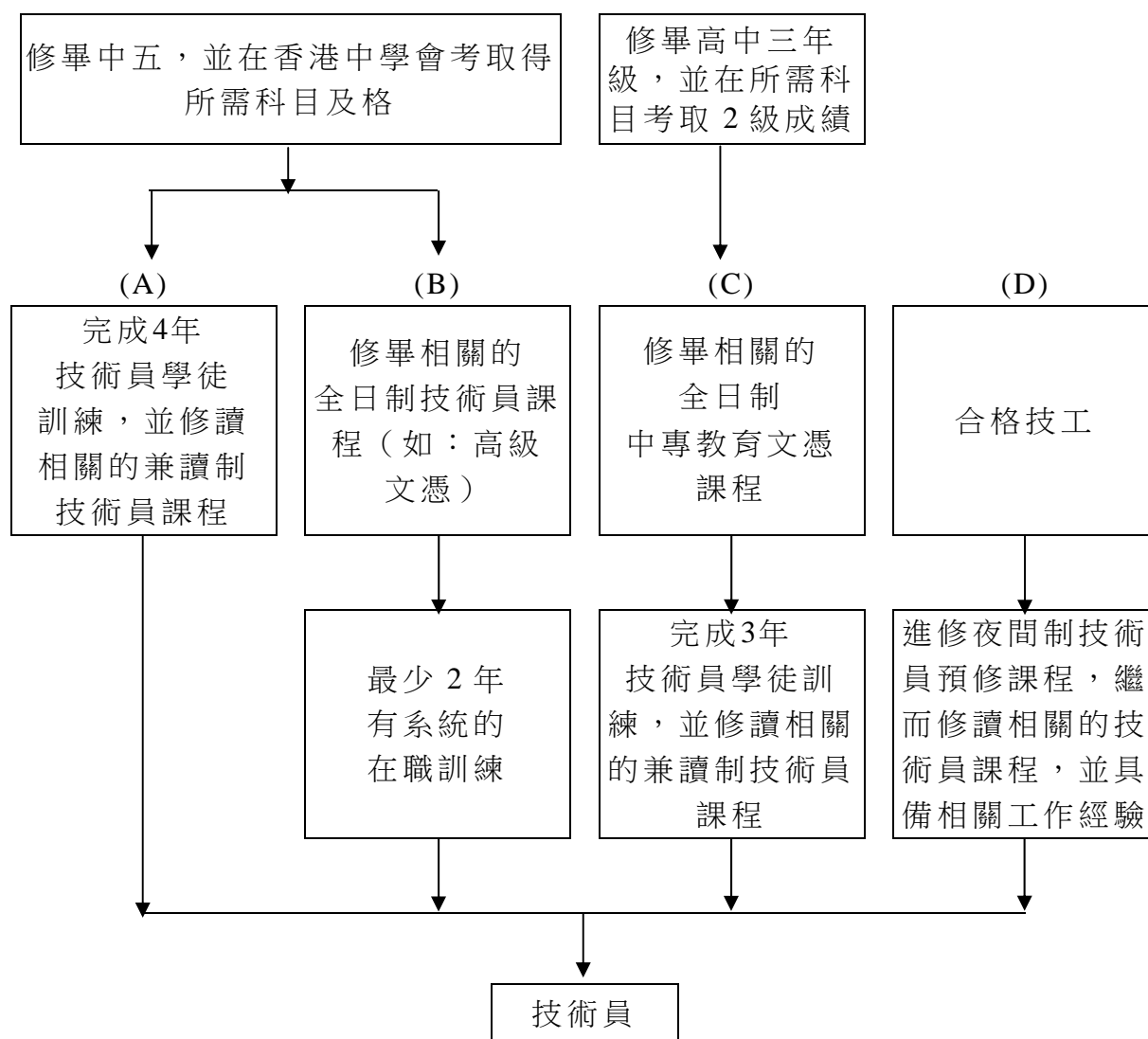
4.13　　香港理工大學及職業訓練局轄下香港專業教育學院(IVE)開辦多項電子工程及相關學科的高級文憑課程。下表列出兩間院校的相關學科全日制高級文憑課程畢業生的預計人數:

表 4.2： 預計高級文憑課程畢業生人數

全日制高級文憑課程	預計畢業生人數	
	2011/12	2012/13
電子及通訊工程	78	60
電子及資訊工程	46	40
數碼電視及動態影像工程	71	77
電腦及資訊工程	70	70
互聯網／多媒體工程	75	75
多媒體設計及科技	125	125
總數	465	447

4.14 卓越培訓發展中心（電子業）為職業訓練局屬下青年學院開辦1年全日制中專教育文憑課程（數碼電子科技分流），供中六離校生修讀。預計2011/12年度並沒有學生畢業，而由2012/13年度開始，每年約有100人畢業。

4.15 根據預測，電子業在 2011/12 年度每年須招聘 1 074 至 1 312 名技術員級人員（電子技術員、推銷技術員、繪圖員、製造／品質保證技術員、程序編製員及網站開發員／設計員），但高級文憑課程及訓練中心技術員課程的畢業生合共約為 465 人，較預測的人力需求為低。不過，部分技術員職位可由參加學徒訓練計劃的中學離校生，以及內部晉升的具經驗技工來填補。調查期間，電子業有 69 名技術員受訓者，而調查之前的 12 個月內，共有 239 名僱員晉升為技術員。

技工訓練

4.16 技工具熟練技術，能夠在極少指導和監督下，將多方面的技能應用到工作上。技工不單要有實際技能，還須具備相關的理論知識，才能適應科技發展。完善的技工學徒訓練會兩者兼備。訓練技工的一般途徑見圖4.3：

圖 4.3： 技工訓練

	(A)		(B)
	修畢相關的全日制中專教育文憑課程，並取得基本技術證書		修畢中三或以上
	↓		↓
	完成 2 至 3 年技工學徒訓練，並修讀相關的兼讀制中專教育文憑課程，取得技工證書		完成3至4年技工學徒訓練，並修讀相關的兼讀制中專教育文憑課程，取得技工證書

技工
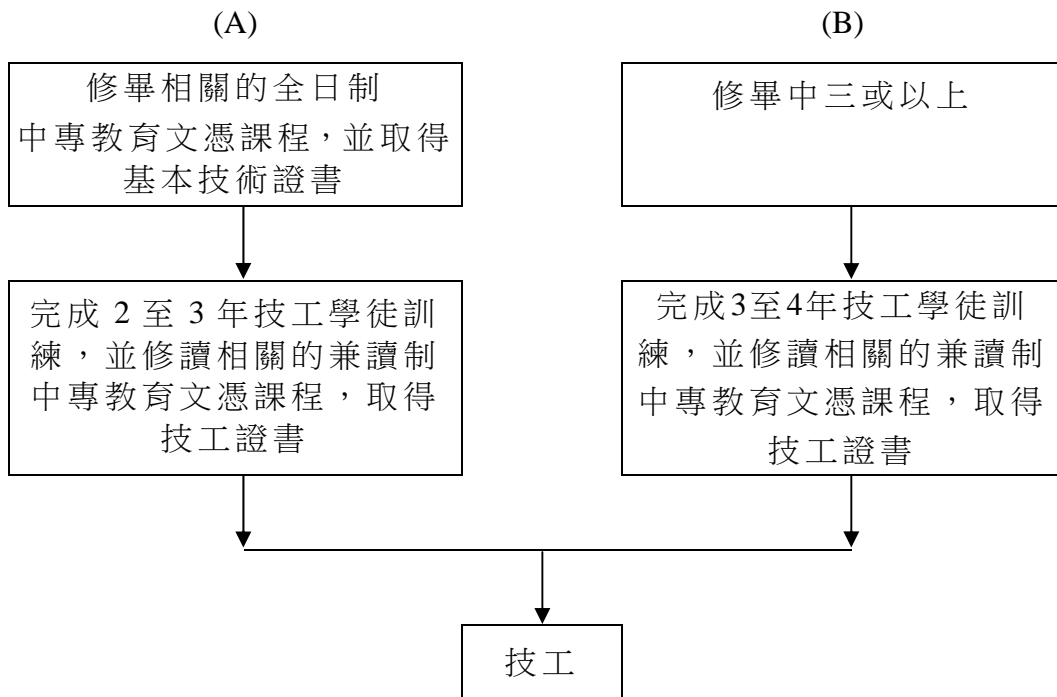
4.17 本會推薦途徑(A)，因為訓練期較短，而且學徒已受過適當的基本訓練，於學徒訓練之始，即可工作。

4.18 卓越培訓發展中心（電子業）採多階進出的修讀模式，與職業訓練局屬下青年學院合作開辦中專教育文憑課程（數碼電子科技分流），供中三離校生修讀。約 50 名學員計劃中於受訓後獲頒技工證書，可以擔任電子業相關職務。電子業於 2011/12 年間，估計每年須招聘 338 至 414 名技工（電纜接駁技工／駁線技工及電子技工），而訓練中心培訓的技工不足此數。不過，可透過學徒訓練計劃，培訓中三離校生紓緩人手短缺。調查期間，電子業有 157 名技工受訓者；而調查之前的 12 個月內，共有 8 名僱員晉升為技工。

教育及培訓機構

4.19 職業訓練局屬下香港專業教育學院及卓越培訓發展中心（電子業），以及幾所大專院校，均為電子從業員提供多種職前及在職培訓課程。本會促請業內僱主聘請這些院校的畢業生為學徒或見習員，並資助僱員修讀有關技能提升課程，以充分利用以上的培訓設施。

香港科技園公司

4.20　　香港特區政府於 2001 年成立香港科技園公司（香港科技園），透過協作形式為以科技為主業的公司及有關活動提供一站式基礎支援服務，包括推出培育計劃協助剛起步的科技公司、在科學園內為應用研發活動提供各種設備和服務、於創新中心開辦設計中心，並在各個工業邨內提供生產所需的用地和廠房。科學園提供良好的研發環境及支援服務，以便屬電子、資訊科技及通訊、生物科技和精密工程四個科技領域的入駐公司，能互相合作和發揮協同效應。科學園內的先進設施及服務包括集成電路設計中心、集成電路失效分析實驗室、光電子開發支援中心、無線通訊測試中心、生物科技支援實驗室、固態照明測試服務、太陽能技術支援中心及材料分析實驗室。電子業僱主應善用香港科技園提供的設施和服務，尤其是集成電路設計方面。

職業訓練局的培訓服務

4.21　　職業訓練局免費協助僱主籌辦法定的學徒訓練計劃，藉此有效地培訓技術員和技工，配合行業所需。僱主可就成立訓練計劃及招聘學徒／見習員事宜聯絡該局，尋求協助。

Appendices and Annexes

附 錄 及 附 件

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MANPOWER STATISTICS OF THE ELECTRONICS INDUSTRY
電子業人力統計數字
Sector 1: Manufacturing (門類一：製造)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間 空缺數目	Forecast of Total Workers by April 2011 預測至 2011 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	471	-	14	482
Electrical Engineer 電機工程師	93	-	-	93
Mechanical Engineer 機械工程師	122	-	3	125
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	257	-	5	262
Chemical Engineer 化學工程師	10	-	-	10
Product/Graphic Designer 產品／平面設計員	17	-	1	18
System Analyst 系統分析員	28	-	-	28
Sub-total 小 計	998	-	23	1 018
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	1 001	-	53	1 016
Mechanical Technician 機械技術員	373	-	1	374
Draughtsman 繪圖員	3	-	-	3
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	326	-	1	327
Supervisor/Foreman/Leader 監督／管工／組長	324	-	-	324
Programmer 程序編製員	33	-	-	33
Web Developer/Designer 網站開發員／設計員	9	-	-	9
Sales Technician 推銷技術員	214	-	-	214
Sub-total 小 計	2 283	-	55	2 300
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	12	-	-	12
Electronics Craftsman 電子技工	1 074	-	-	1 070
Electrician 電氣技工	35	5	-	35
Mechanic 技工	45	-	-	45
Sub-total 小 計	1 166	5	-	1 162
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	2 559	15	23	2 558
Sub-total 小 計	2 559	15	23	2 558
GRAND TOTAL 總 計	**7 006**	**20**	**101**	**7 038**

MANPOWER STATISTICS OF THE ELECTRONICS INDUSTRY
電子業人力統計數字
Sector 2: Trading and Services (門類二：貿易及服務)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間 空缺數目	Forecast of Total Workers by April 2011 預測至 2011 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	4 254	8	34	4 295
Electrical Engineer 電機工程師	261	3	4	265
Mechanical Engineer 機械工程師	336	-	12	348
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	472	-	-	472
Chemical Engineer 化學工程師	1	-	-	1
Product/Graphic Designer 產品／平面設計員	301	-	-	301
System Analyst 系統分析員	1 803	-	201	2 019
Sub-total 小 計	7 428	11	251	7 701
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	6 468	68	75	6 662
Mechanical Technician 機械技術員	389	-	5	394
Draughtsman 繪圖員	57	-	1	58
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	329	-	-	329
Supervisor/Foreman/Leader 監督／管工／組長	761	-	1	762
Programmer 程序編製員	2 287	-	181	2 436
Web Developer/Designer 網站開發員／設計員	312	-	10	322
Sales Technician 推銷技術員	4 838	-	68	4 906
Sub-total 小 計	15 441	68	341	15 869
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	273	18	-	273
Electronics Craftsman 電子技工	2 966	86	55	3 067
Electrician 電氣技工	526	42	-	548
Mechanic 技工	2	4	-	6
Sub-total 小 計	3 767	150	55	3 894
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	593	-	-	593
Sub-total 小 計	593	-	-	593
GRAND TOTAL 總 計	**27 229**	**229**	**647**	**28 057**

ANPOWER STATISTICS OF THE ELECTRONICS INDUSTRY
電子業人力統計數字
Sector 3: Telecommunications Services (門類三：電訊服務)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間 空缺數目	Forecast of Total Workers by April 2011 預測至 2011 年 4 月時的僱員總數
TECHNOLOGIST LEVEL　技師級				
Electronics Engineer 電子工程師	1 901	36	5	1 906
Electrical Engineer 電機工程師	46	-	-	46
Mechanical Engineer 機械工程師	10	-	-	10
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	34	-	-	34
Chemical Engineer 化學工程師	-	-	-	-
Product/Graphic Designer 產品／平面設計員	2	-	-	2
System Analyst 系統分析員	219	-	-	219
Sub-total　小　計	2 212	36	5	2 217
TECHNICIAN LEVEL　技術員級				
Electronics Technician 電子技術員	2 916	1	7	2 923
Mechanical Technician 機械技術員	14	-	-	14
Draughtsman 繪圖員	66	-	-	66
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	-	-	-	-
Supervisor/Foreman/Leader 監督／管工／組長	219	-	-	219
Programmer 程序編製員	356	-	3	359
Web Developer/Designer 網站開發員／設計員	392	-	1	393
Sales Technician 推銷技術員	478	-	1	479
Sub-total　小　計	4 441	1	12	4 453
CRAFTSMAN LEVEL　技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	48	-	-	48
Electronics Craftsman 電子技工	848	-	14	862
Electrician 電氣技工	44	-	-	44
Mechanic 技工	5	-	-	5
Sub-total　小　計	945	-	14	959
OPERATIVE LEVEL　操作工級				
Operator 生產線操作工	144	-	-	144
Sub-total　小　計	144	-	-	144
GRAND TOTAL　總　計	**7 742**	**37**	**31**	**7 773**

MANPOWER STATISTICS OF THE ELECTRONICS INDUSTRY
電子業人力統計數字

Sector 4: Wholesale (門類四：批發)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間 空缺數目	Forecast of Total Workers by April 2011 預測至 2011 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	249	-	1	250
Electrical Engineer 電機工程師	23	-	-	23
Mechanical Engineer 機械工程師	-	-	-	-
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	8	-	-	8
Chemical Engineer 化學工程師	-	-	-	-
Product/Graphic Designer 產品／平面設計員	13	-	-	13
System Analyst 系統分析員	21	-	-	21
Sub-total 小 計	314	-	1	315
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	630	-	13	643
Mechanical Technician 機械技術員	21	-	-	21
Draughtsman 繪圖員	-	-	-	-
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	2	-	-	2
Supervisor/Foreman/Leader 監督／管工／組長	6	-	-	6
Programmer 程序編製員	25	-	5	30
Web Developer/Designer 網站開發員／設計員	-	-	-	-
Sales Technician 推銷技術員	979	-	4	983
Sub-total 小 計	1 663	-	22	1 685
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	10	-	-	10
Electronics Craftsman 電子技工	427	-	17	444
Electrician 電氣技工	135	-	-	135
Mechanic 技工	-	-	-	-
Sub-total 小 計	572	-	17	589
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	50	-	-	50
Sub-total 小 計	50	-	-	50
GRAND TOTAL 總 計	**2 599**	**-**	**40**	**2 639**

MANPOWER STATISTICS OF THE ELECTRONICS INDUSTRY
電子業人力統計數字

Sector 5: Design Houses, Relevant Departments in Educational Institutions and Government
(門類五：設計公司、教育院校及政府有關部門)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間 空缺數目	Forecast of Total Workers by April 2011 預測至 2011 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	550	-	10	573
Electrical Engineer 電機工程師	220	-	-	236
Mechanical Engineer 機械工程師	3	-	-	3
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	31	-	-	31
Chemical Engineer 化學工程師	-	-	-	-
Product/Graphic Designer 產品／平面設計員	12	-	-	12
System Analyst 系統分析員	58	-	-	60
Sub-total 小 計	874	-	10	915
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	1 001	-	12	1 030
Mechanical Technician 機械技術員	161	-	1	170
Draughtsman 繪圖員	4	-	-	4
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	24	-	-	24
Supervisor/Foreman/Leader 監督／管工／組長	1 021	-	-	1 047
Programmer 程序編製員	138	-	-	143
Web Developer/Designer 網站開發員／設計員	1	-	1	2
Sales Technician 推銷技術員	13	-	-	13
Sub-total 小 計	2 363	-	14	2 433
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	-	-	-	-
Electronics Craftsman 電子技工	226	-	-	226
Electrician 電氣技工	389	-	-	447
Mechanic 技工	468	-	-	511
Sub-total 小 計	1 083	-	-	1 184
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	135	-	-	135
Sub-total 小 計	135	-	-	135
GRAND TOTAL 總 計	**4 455**	**2**	**24**	**4 664**

電子業人力統計數字

MANPOWER STATISTICS OF THE ELECTRONICS INDUSTRY
電子業人力統計數字
Sector 6: Retail Shops for Electronics Products (7 large shops)
(門類六：零售－7 間大型電子產品零售公司)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間 空缺數目	Forecast of Total Workers by April 2011 預測至 2011 年 4 月時的僱員總數
TECHNOLOGIST LEVEL　　技師級				
Electronics Engineer 電子工程師	2	-	-	2
Electrical Engineer 電機工程師	3	-	-	3
Mechanical Engineer 機械工程師	-	-	-	-
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	-	-	-	-
Chemical Engineer 化學工程師	-	-	-	-
Product/Graphic Designer 產品／平面設計員	-	-	-	-
System Analyst 系統分析員	2	-	-	2
Sub-total　小　計	7	-	-	7
TECHNICIAN LEVEL　　技術員級				
Electronics Technician 電子技術員	190	-	1	191
Mechanical Technician 機械技術員	-	-	-	-
Draughtsman 繪圖員	-	-	-	-
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	-	-	-	-
Supervisor/Foreman/Leader 監督／管工／組長	-	-	-	-
Programmer 程序編製員	-	-	-	-
Web Developer/Designer 網站開發員／設計員	2	-	-	2
Sales Technician 推銷技術員	2 885	-	2	2 887
Sub-total　小　計	3 077	-	3	3 080
CRAFTSMAN LEVEL　　技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	-	-	-	-
Electronics Craftsman 電子技工	-	-	-	-
Electrician 電氣技工	-	-	-	-
Mechanic 技工	-	-	-	-
Sub-total　小　計	-	-	-	-
OPERATIVE LEVEL　　操作工級				
Operator 生產線操作工	-	-	-	-
Sub-total　小　計	-	-	-	-
GRAND TOTAL　總　計	**3 084**	**-**	**3**	**3 087**

MANPOWER STATISTICS OF THE ELECTRONICS INDUSTRY (ALL SECTORS)
電子業人力統計數字（各門類）

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間 空缺數目	Forecast of Total Workers by April 2011 預測至 2011 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	7 427	44	64	7 505
Electrical Engineer 電機工程師	646	3	4	666
Mechanical Engineer 機械工程師	471	-	15	486
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	802	-	5	807
Chemical Engineer 化學工程師	23	-	-	23
Product/Graphic Designer 產品／平面設計員	333	-	1	334
System Analyst 系統分析員	2 131	-	201	2 349
Sub-total　小　計	11 833	47	290	12 170
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	12 206	69	161	12 465
Mechanical Technician 機械技術員	958	-	7	973
Draughtsman 繪圖員	130	-	1	131
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	681	-	1	682
Supervisor/Foreman/Leader 監督／管工／組長	2 331	-	1	2 358
Programmer 程序編製員	2 839	-	189	3 001
Web Developer/Designer 網站開發員／設計員	716	-	12	728
Sales Technician 推銷技術員	9 407	-	75	9 482
Sub-total　小　計	29 268	69	447	29 820
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	343	18	-	343
Electronics Craftsman 電子技工	5 541	86	86	5 669
Electrician 電氣技工	1 129	49	-	1 209
Mechanic 技工	520	4	-	567
Sub-total　小　計	7 533	157	86	7 788
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	3 481	15	23	3 480
Sub-total　小　計	3 481	15	23	3 480
GRAND TOTAL　總　計	**52 115**	**288**	**846**	**53 258**

DISTRIBUTION OF EMPLOYEES BY MONTHLY INCOME RANGE (ALL SECTORS)
根據每月總收入幅度劃分的僱員分布情況（各門類）

Job Title 職稱	Unspecified 未有說明	Below $6,001 以下	$6,001 - $8,000	$8,001 - $10,000	$10,001 - $15,000	$15,001 - $20,000	$20,001 - $25,000	$25,001 - $30,000	Over $30,000 以上
TECHNOLOGIST LEVEL 技師級									
Electronics Engineer 電子工程師	2 517	-	-	-	271	1 010	1 393	1 300	936
Electrical Engineer 電機工程師	13	-	-	-	-	103	142	272	116
Mechanical Engineer 機械工程師	103	-	-	-	-	57	220	35	56
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	235	-	-	-	-	72	183	235	77
Chemical Engineer 化學工程師	7	-	-	-	-	3	-	1	12
Product/Graphic Designer 產品／平面設計員	51	-	-	-	97	120	4	60	1
System Analyst 系統分析員	656	-	-	-	100	632	208	192	343
Sub-total 小 計	3 582	-	-	-	468	1 997	2 150	2 095	1 541
TECHNICIAN LEVEL 技術員級									
Electronics Technician 電子技術員	2 986	-	340	642	2 565	3 804	846	574	413
Mechanical Technician 機械技術員	137	-	11	18	440	171	172	2	7
Draughtsman 繪圖員	43	1	-	4	68	10	-	-	4
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	315	-	-	118	136	83	1	28	-
Supervisor/Foreman/Leader 監督／管工／組長	260	-	-	-	407	1 326	312	26	-
Programmer 程序編製員	989	-	-	82	985	398	372	13	-
Web Developer/Designer 網站開發員／設計員	198	-	-	74	368	50	25	1	-
Sales Technician 推銷技術員	2 747	-	60	544	2 660	889	1 777	514	216
Sub-total 小 計	7 675	1	411	1 482	7 629	6 767	3 505	1 158	640
CRAFTSMAN LEVEL 技工級									
Cable Jointer/Wireman 電纜接駁技工／駁線技工	47	-	28	-	268	-	-	-	-
Electronics Craftsman 電子技工	770	114	590	1 715	2 233	119	-	-	-
Electrician 電氣技工	24	-	48	518	539	-	-	-	-
Mechanic 技工	3	-	-	36	474	7	-	-	-
Sub-total 小 計	844	114	666	2 269	3 514	126	-	-	-
OPERATIVE LEVEL 操作工級									
Operator 生產線操作工	1 614	114	1 062	689	2	-	-	-	-
Sub-total 小 計	1 614	114	1 062	689	2	-	-	-	-
GRAND TOTAL 總 計	**13 715**	**229**	**2 139**	**4 440**	**11 613**	**8 890**	**5 655**	**3 253**	**2 181**

SKILLS EMPLOYEES NEED TO ENHANCE
僱員需要加強培訓的技能

Skills 技能	No. of Employees 僱員人數			
	Technologist 技師	Technician 技術員	Craftsman 技工	All 總數
Management Skills　　管理技能				
101 Production and engineering management 工業生產及工程管理	763	277	-	1 040
102 Marketing management 經銷管理	190	1 883	100	2 173
103 Project management 計劃管理	2 130	157	-	2 287
104 Quality management 品質管理	552	243	153	948
105 Purchasing management 採購管理	57	1 831	-	1 888
106 People management 人事管理	303	209	-	512
107 Leadership skills 領導能力	1 849	344	-	2 193
China-related Knowledge and World Vision　　有關中國的知識及世界視野				
201 Social and economic development in China 在中國內地的社會和經濟發展	86	-	-	86
202 Laws and regulatory restrictions to China 進入中國市場的法律和規條限制	16	76	-	92
203 Trade practices in the mainland of China 在中國內地的營商常規	30	16	-	46
204 Cross-cultural knowledge 跨文化的知識	56	284	-	340
205 World vision 世界視野	241	517	-	758
Language Skills　　語文能力				
301 Spoken English 英語會話	453	2 691	950	4 094
302 Written English 英文書寫能力	168	1 539	763	2 470
303 Putonghua 普通話	1 010	3 155	249	4 414
304 Written Chinese 中文書寫能力	-	698	-	698
Interpersonal and Intrapersonal Skills for the Workplace　　工作間的人際及個人才能				
401 Problem solving 解決問題	2 836	7 420	2 812	13 068
402 Creativity 創意力	837	2 196	4	3 037
403 Critical thinking 批判思考能力	376	1 562	114	2 052
404 Communication skills 溝通技巧	521	4 703	1 189	6 413
405 Team building 團隊建立	696	1 430	1 161	3 287
406 Time management skills 時間管理技巧	361	1 106	255	1 722
407 Optimism/Positive 樂觀/積極	288	1 262	149	1 699
408 Self-esteem 自尊	-	6	-	6
409 Perseverance 毅力	299	496	689	1 484
410 Change management skills 變革管理技巧	315	109	-	424
411 Customer services skills 客戶服務技巧	1 137	9 853	2 438	13 428
413 Ability to learn/adapt new skills/knowledge 學習或適應新科技、新知識的能力	1 915	6 905	1 538	10 358
Others　　其他				
699 Others 其他	100	979	146	1 225

RECOMMENDED NUMBER OF TRAINEES
TO BE TAKEN ON ANNUALLY FOR THE NEXT FEW YEARS
建議未來幾年每年應取錄的受訓者人數

Job Title 職稱	No. of Workers Employed at Time of Survey (2010) 調查期間 （2010 年） 僱員人數	Recommended Number of Trainees to be Taken on Annually Starting from 2010 建議由 2011 年起 每年取錄的受訓者人數
TECHNOLOGIST LEVEL 技師級		
Electronics Engineer 電子工程師	7 427	419 – 512
Electrical Engineer 電機工程師	646	37 - 45
Mechanical Engineer 機械工程師	471	27 – 32
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	802	45 – 55
Chemical Engineer 化學工程師	23	1 – 2
Product/Graphic Designer 產品／平面設計員	333	19 – 23
System Analyst 系統分析員	2 131	120 – 147
Sub-total 小 計	**11 833**	**668 - 816**
TECHNICIAN LEVEL 技術員級		
Electronics Technician 電子技術員	12 206	505 – 617
Mechanical Technician 機械技術員	958	40 – 48
Draughtsman 繪圖員	130	5 – 7
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	681	28 – 34
Supervisor/Foreman/Leader 監督／管工／組長	2 331	96 – 118
Programmer 程序編製員	2 839	117 – 143
Web Developer/Designer 網站開發員／設計員	716	30 – 36
Sales Technician 推銷技術員	9 407	389 – 475
Sub-total 小 計	**29 268**	**1210 – 1478**
CRAFTSMAN LEVEL 技工級		
Cable Jointer/Wireman 電纜接駁技工／駁線技工	343	20 –24
Electronics Craftsman 電子技工	5 541	318 – 390
Electrician 電氣技工	1 129	65 – 79
Mechanic 技工	520	30 – 37
Sub-total 小 計	**7 533**	**433 – 530**

Membership of the Electronics and Telecommunications Training Board
(February 2011)

電 子 業 及 電 訊 業 訓 練 委 員 會 委 員 名 單
(2011 年 2 月)

Chairman:
主席

    Mr NG Kwok-ho, Victor   (nominated by the Hong Kong Electronic Industries
    吳國豪先生   Association Limited)
                         （香港電子業商會提名）

Vice-Chairman:
副主席

    Mr MAK Moon-kuen   (nominated by an Electronics Manufacturing Company
    麥滿權先生   （Semi-Conductor））
                         （一間半導體製造公司提名）

Members:
委員

    Mr YEUNG Hoi-shan, Paul   (nominated by the Federation of Hong Kong
    楊凱山先生   Industries)
                         （香港工業總會提名）

    Mr CHAN Cheuk-man, Edmond   (nominated by an Electronics Manufacturing Company
    陳焯民先生   （Consumer Products））
                         （一間電子消費產品製造公司提名）

    Prof KI Wing-hung   (nominated by a Local University)
    暨永雄教授   （本地一大學提名）

    Ms HUI Ching-yee, Rita   (nominated by a Telecommunication Company (The
    許清儀女士   Mobile Telecommunicaton Network Services
                         Sector))
                         （一間流動電訊網絡服務公司提名）

    Mr LAI Yuen-lung   (nominated by the Hong Kong & Kowloon
    黎元龍先生   Electronics Industry Employees' General Union)
                         （港九電子工業職工總會提名）

    Mr LAM Lum-lee, Mark   (nominated by an Electronics Manufacturing Company
    林倫理先生   （Components/ Parts））
                         （一間電子元件及配件製造公司提名）

    Mr LEUNG Ding-kau   (nominated by an Electronics Manufacturing
    梁定球先生   Company (Computers and Related Peripherals))
                         （一間電腦及有關周邊裝置製造公司提名）

Mr LEUNG Wai-boon (nominated by a Broadcasting Company)
梁維本先生 （一間廣播公司提名）

Mr LEUNG Wai-ming, Frank (nominated by the Hong Kong Productivity Council)
梁偉明先生 （香港生產力促進局提名）

Ir Dr LI Chi-kwong (nominated by the Hong Kong Institution of
李志光博士 Engineers)
  （香港工程師學會提名）

Mr NG Wing-ka, Jimmy (nominated by the Chinese Manufacturers'
吳永嘉先生 Association of Hong Kong)
  （香港中華廠商聯合會提名）

Ir Dr TONG Wai-kwok, Aaron (Ad Personam)
唐偉國博士 （獨立人士）

Mr TSANG Hon-chung (nominated by an Electronics Trading/ Engineering
曾漢中先生 Services Company)
  （一間電子貿易／工程服務公司提名）

Mr TSE Pui-tak, Daniel (nominated by an Electronics Manufacturing Company
謝培德先生 (Telecommunications))
  （一間電訊器材製造公司提名）

Mr LI Kwong-ming, Kelvin (nominated by a Telecommunication Company (The
李曠明先生 Fixed Telecommunicaton Network Services
  Sector))
  （一間固定電訊網絡服務公司提名）

Mr POON Kwok-ying (representative of the Director of Electrical and
潘國英先生 Mechanical Services)
  （機電工程署署長代表）

Mr CHAN Tze-yee (representative of the Director-General of
陳子儀先生 Telecommunications)
  （電訊管理局總監代表）

Mr CHU Kwai-luen, Albert (representative of the Executive Director of the
朱桂鑾先生 Vocational Training Council)
  （職業訓練局執行幹事代表）

Mr NG Ka-lok, Eric (representative of the Director-General of
吳家樂先生 Trade and Industry)
  （工業貿易署署長代表）

    Dr CHIU Ping-kuen, Peter
    趙炳權博士

Head of Department (Electronic & Information Engineering), Hong Kong Institute of Vocational Education (Shatin)
香港專業教育學院 (沙田) 電子及資訊工程系
  系主任

    Mr HUI Chi-kwok
    許志國先生

Manager-In-Charge, Pro-Act Training and Development Centre (Electronics)
卓越培訓發展中心（電子業）

    Dr LAW Chi-ming, Caleb
    羅智明博士

Acting Head of Department (Electronic & Information Engineering), Hong Kong Institute of Vocational Education (Kwun Tong)
香港專業教育學院 (觀塘) 電子及資訊工程系
  署理系主任

    Mr LAM Kwok-luen
    林國聯先生

Vice President (Broadcasting & Engineering Operations), Hong Kong Cable Television Ltd.
香港有線娛樂有限公司 副總裁 廣播運作及工程部

    Mr CHENG Tai-man
    鄭泰民先生

(Vocational Training Council)
（職業訓練局）

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Electronics and Telecommunications Training Board

<u>Terms of Reference</u>

1.　To determine the manpower demand of the industry, including the collection and analysis of relevant manpower and student/trainee statistics and information on socio-economic, technological and labour market developments.

2.　To assess and review whether the manpower supply for the industry matches with the manpower demand.

3.　To recommend to the Vocational Training Council (VTC) the development of vocational education and training facilities to meet the assessed manpower demand.

4.　To advise the Hong Kong Institute of Vocational Education (IVE) and training & development centres on the direction and strategic development of their programmes in the relevant disciplines.

5.　To advise on the course planning, curriculum development and quality assurance systems of the IVE and training & development centres.

6.　To prescribe job specifications for the principal jobs in the industry defining the skills, knowledge and training required.

7.　To advise on training programmes for the principal jobs in the industry specifying the time a trainee needs to spend on each skill elements.

8.　To tender advice in respect of skill assessments, trade tests and certification for in-service workers, apprentices and trainees, for the purpose of ascertaining that the specified skill standards have been attained.

9.　To advise on the conduct of skill competitions in key trades in the industry for the promotion of vocational education and training as well as participation in international competitions.

10.　To liaise with relevant bodies, including employers, employers' associations, trade unions, professional institutions, training and educational institutions and government departments, on matters pertaining to the development and promotion of vocational education and training in the industry.

11.　To organize seminars/conferences/symposia on vocational education and training for the industry.

12.　To advise on the publicity relating to the activities of the Training Board and relevant vocational education and training programmes of the VTC.

13.　To submit to the Council an annual report on the Training Board's work and its recommendations on the strategies for programmes in the relevant disciplines.

14.　To undertake any other functions delegated by the Council in accordance with Section 7 of the Vocational Training Council Ordinance.

電子業及電訊業訓練委員會

職權範圍

1. 確定業內的人力需求，包括收集、分析相關的人力和學生／學員統計數字，以及關於社會經濟、科技及人力市場發展的資料。

2. 評估及研究本業的人力供求是否平衡。

3. 就發展業內專業教育及訓練設施應付人力需求，向職業訓練局(職訓局)提供意見。

4. 就相關學科的課程發展方向及策略，向香港專業教育學院(IVE)、訓練及發展中心提出建議。

5. 就 IVE、訓練及發展中心的課程策劃、課程發展及質素保證制度提供意見。

6. 擬訂本業主要職務的工作範圍，界定所需的技能、知識及訓練。

7. 建議本業主要職務訓練方案，訂定每種技能所需的訓練期。

8. 對技術評估、技能測驗及證書頒發制度提供意見，以確定從業員、學徒及見習員的技能水平。

9. 就本業主要行業舉辦技能比賽提供意見，以推廣專業教育與訓練和派員參加國際賽事。

10. 就本業專業教育及訓練的發展與推廣事宜，與僱主、僱主聯會、工會、專業團體、訓練及教育機構、政府部門等聯絡。

11. 為本業舉辦有關專業教育及訓練的研討會與會議。

12. 就業內訓練委員會工作、有關職訓局專業教育及訓練課程的宣傳事宜提供意見。

13. 每年向局方呈交訓練委員會工作報告，以及相關學科課程發展策略建議。

14. 根據《職業訓練局條例》第 7 條，負責局方所委派的其他工作。

Vocational Training Council 職業訓練局

Headquarters Division 2 總辦事處二科
16F VTC Tower, 27 Wood Road, Wan Chai, Hong Kong 香港灣仔活道27號職業訓練局大樓16樓
www.vtc.edu.hk

Telephone No 電話		Facsimile No 傳真	
Our Reference 本局檔號	(4) in EC/4/2 (2010)	Your Reference 來函檔號	

7th April 2010

Dear Sir/Madam,

The 2010 Manpower Survey of the Electronics Industry

The Electronics and Telecommunications Training Board of the Vocational Training Council is appointed by the Government of the Hong Kong Special Administrative Region to be responsible for all matters pertaining to the planning and training of manpower in the electronics industry.

With the assistance of the Census and Statistics Department, the Training Board will conduct the 2010 manpower survey of the industry from 19th April to 18th June 2010 to collect the following information about each of the principal jobs in the industry:

(a)   the number of employees at present employed,

(b)   the number of employees at present under training,

(c)   the number of existing vacancies, and

(d)   a forecast of the total number of employees by April 2011.

The information collected will be handled in strict confidence and will be published only in the form of statistical summaries without reference to any individual establishment.

- - - -   I am forwarding for your reference and completion, the following documents in both English and Chinese:
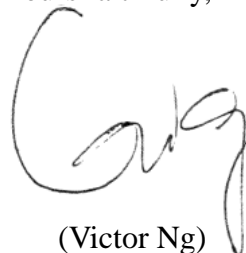
         (a)   a questionnaire (Appendix A);

         (b)   an explanatory note on the questionnaire (Appendix B); and

         (c)   a list of job descriptions for the principal jobs in the electronics industry (Appendix C).

         During the period of the survey, an officer of the Census and Statistics Department will call at your office.   The officer will assist in the completion of the questionnaire, if necessary, and collect the questionnaire for processing.

         I sincerely hope that you will co-operate in this survey to enable the Electronics and Telecommunications Training Board to make training plans for the benefit of the industry.   The Manpower Survey Report will be uploaded onto the VTC website at **http://ectb.vtc.edu.hk** .

         Thank you for your kind participation and contribution to the electronics industry. Should you have any queries in connection with the survey, please contact the Manpower Statistics Section of the Census and Statistics Department by telephoning 2116 8375.

                    Yours faithfully,

                    (Victor Ng)
                    Chairman
       Electronics and Telecommunications Training
                    Board

Vocational Training Council 職業訓練局

Headquarters Division 2 總辦事處二科
16F VTC Tower, 27 Wood Road, Wan Chai, Hong Kong 香港灣仔活道27號職業訓練局大樓16樓
www.vtc.edu.hk

Telephone No 電話   Facsimile No 傳真

Our Reference 本局檔號　(　　) in EC/4/2 (2010)　　Your Reference 來函檔號

各 位 僱 主 ：

電 子 業 二 零 一 零 年 人 力 調 查

　　職 業 訓 練 局 電 子 業 及 電 訊 業 訓 練 委 員 會 由 香 港 特 別 行 政 區 政 府 委 任 ， 負 責 一 切 有 關 電 子 業 的 人 力 策 劃 及 訓 練 事 宜 。

　　在 政 府 統 計 處 協 助 下 ， 本 訓 練 委 員 會 將 於 本 年 四 月 十 九 日 至 六 月 十 八 日 期 間 ， 進 行 電 子 業 二 零 一 零 年 人 力 調 查 ， 蒐 集 本 業 各 主 要 職 務 的 資 料 ：

（ 一 ）　現 有 僱 員 人 數 ；
（ 二 ）　現 有 受 訓 人 數 ；
（ 三 ）　現 有 空 缺 額 ；
（ 四 ）　預 計 二 零 一 一 年 四 月 時 的 僱 員 總 數 。

　　調 查 所 得 資 料 絕 對 保 密 ， 只 以 摘 要 統 計 數 字 發 表 ， 並 不 提 及 個 別 機 構 。

　　現 附 上 以 下 中 英 對 照 文 件 ， 供 貴 機 構 參 閱 填 寫 ：

（ 一 ）　調 查 表 （ 附 錄 A ）；
（ 二 ）　調 查 表 附 註 （ 附 錄 B ）；
（ 三 ）　電 子 業 主 要 職 務 工 作 說 明 （ 附 錄 C ）。

調查期間，政府統計處職員會到訪貴機構，收取調查表作資料處理，並於需要時協助填寫調查表。

是次調查，懇請貴機構惠予合作，使本訓練委員會能為電子業定出人力訓練計劃。如對調查有任何查詢，請致電 2116 8375 與政府統計處人力統計組聯絡。

電子業及電訊業訓練委員會主席
吳國豪

二零一零年四月七日

CONFIDENTIAL
WHEN DATA ENTERED
填 入 數 據 後 即 成
機 密 文 件

VOCATIONAL TRAINING COUNCIL
職 業 訓 練 局

THE 2010 MANPOWER SURVEY OF THE ELECTRONICS INDUSTRY
電 子 業 二 零 一 零 年 人 力 調 查

QUESTIONNAIRE
調 查 表

PLEASE READ THE EXPLANATORY NOTES BEFORE COMPLETING THIS QUESTIONNAIRE
填 表 前 ， 請 參 閱 附 註

For official use only: 此 欄 毋 須 填 寫	Rec. Type	Survey Code	Industry Code	Establishment No.	Enumerator's No.	Editor's No.	Check Digit	No. of Employees Covered by the Questionnaire
	1	**0** **5**						
	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

NAME OF ESTABLISHMENT:
機 構 名 稱

ADDRESS:
地址

TYPE OF PRODUCT/SERVICE:
產 品 ／ 服 務

TOTAL NUMBER OF PERSONS ENGAGED:
僱 員 總 人 數

NAME OF PERSON TO CONTACT:
聯 絡 人 姓 名
28   47

POSITION:
職 位

TEL. NO.:
電 話
48   55   56   63

FAX NO.:
圖 文 傳 真

E-MAIL:
電 郵
64   98

VTC-EC-01

83

(A) Job 工作				(B) Average Monthly Income 每月平均收入	(C) Number Employed at Date of Survey (excl. trainees) 現有僱員人數（受訓者除外）	(D) Forecast of Number Employed 12 Months from Now (excl. trainees) 預計十二個月後僱員人數（受訓者除外）	(E) Number of Vacancies at Date of Survey (excl. trainees) 現有空缺額（受訓者除外）	(F) Number of Trainees at Date of Survey 現有受訓者人數	Average Monthly Income 每月平均收入
Title 職稱	Rec. Type	Job Code 職位編號	Code 編號					Enter in column B employee's average monthly income range according to the following codes : 請將僱員的每月平均收入幅度按照下列類別編號填入B欄內：
For Official Use Only 此欄毋須填寫 →		8-10	11	12-15	16-19	20-22	23-25	

					Code 編號	Average Monthly Income Range 每月平均收入幅度
TECHNOLOGIST LEVEL 技師級						
1	Electronics Engineer 電子工程師	2	1 0 1		1	Under $6,001 以下
2	Electrical Engineer 電機工程師	2	1 0 2			
3	Mechanical Engineer 機械工程師	2	1 0 3		2	$6,001 - $8,000
4	Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	2	1 0 4		3	$8,001 - $10,000
5	Chemical Engineer 化學工程師	2	1 0 5		4	$10,001 - $15,000
6	Product/Graphic Designer 產品／平面設計員	2	1 0 6		5	$15,001 - $20,000
7	System Analyst 系統分析員	2	1 0 7		6	$20,001 - $25,000
TECHNICIAN LEVEL 技術員級					7	$25,001 - $30,000
8	Electronics Technician 電子技術員	2	2 0 1		8	Over $30,000 以上
9	Mechanical Technician 機械技術員	2	2 0 2			
10	Draughtsman 繪圖員	2	2 0 3			
11	Manufacturing/Quality Assurance Technician 製造／品質保證技術員	2	2 0 4			
12	Supervisor/Foreman/Leader 監督／管工／組長	2	2 0 5			
13	Programmer 程式編製員	2	2 0 6			
14	Web Developer/Designer 網站開發員／設計員	2	2 0 7			
15	Sales Technician 推銷技術員	2	2 0 8			
CRAFTSMAN LEVEL 技工級						
16	Cable Jointer/Wireman 電纜接駁技工／駁線技工	2	3 0 1			
17	Electronics Craftsman 電子技工	2	3 0 2			
18	Electrician 電氣技工	2	3 0 3			
19	Mechanic 技工	2	3 0 4			
OPERATIVE LEVEL 操作工級						
20	Operator 生產線操作工	2	4 0 1			
21		2				
22		2				
23		2				
24		2				
25		2				

Remark 備註

Note 1 If additional lines are necessary, please tick here ☐ and enter on supplementary sheet(s).
附註一 如此頁填滿，請先將（✔）號填入此 ☐ 內，然後在附頁繼續填寫 。

Note 2 The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.
附註二 「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

85

1. Internal Promotion
内部晉升

Please fill in the number of internal promotion in the past 12 months
請填寫過去十二個月內，內部晉升的人數

Rec. Type	From Technician to Technologist 由技術員 晉升至技師	From Craftsman to Technician 由技工 晉升至技術員	From Others to Craftsman 由其他職級 晉升至技工	For official use only 此欄毋須填寫
3				
1	8　9　10	11　12　13	14　15　16	17

2. Hong Kong Technical Personnel Dispatched Outside Hong Kong
遣派香港以外的香港技術人員

Please enter below the number of technical personnel paid by Hong Kong who had been dispatched to work for more than half year outside Hong Kong during the 12 months prior to the survey.
請填寫調查前十二個月內，由香港支薪而被派往外地工作超過半年的技術人員數目

Number of Technologists 技師人數	Number of Technicians 技術員人數	Number of Craftsmen 技工人數	For official use only 此欄毋須填寫
18　19　20　21	22　23　24　25	26　27　28　29	30

3. Education and Training an Employee Should Have
僱員宜有的教育及訓練

Technologist 技師			Technician 技術員			Craftsman 技工		
Education 教育	Training Mode 訓練方式	Training Period 訓練時間	Education 教育	Training Mode 訓練方式	Training Period 訓練時間	Education 教育	Training Mode 訓練方式	Training Period 訓練時間
31	32	33	34	35	36	37	38	39

Please enter in the boxes the education and training an employee should have according to the following codes:
請將僱員宜有的教育及訓練按照下列類別編號填入格內：

Code 編號	Education 教育	Code 編號	Training Mode 訓練方式	Code 編號	Training Period 訓練時間
1	Degree/Associateship or equivalent 大學學位／院士或同等學歷	1	Graduate traineeship 工科畢業生訓練	1	4 years or above 四年或以上
2	Higher Diploma 高級文憑	2	On-the-job training 在職訓練	2	3 to less than 4 years 三年至四年以下
3	Diploma 文憑	3	Apprenticeship 學徒訓練	3	2 to less than 3 years 二年至三年以下
4	Higher Certificate 高級證書	4	Off-the-job training 職外訓練	4	1 to less than 2 years 一年至二年以下
5	Certificate 證書	5	Others 其他	5	6 to less than 12 months 六至十二個月以下
6	Secondary 5 中五			6	Below 6 months 六個月以下
7	Craft Certificate 技工證書				
8	Secondary 3 or below 中三或以下				

1.   Recruitment
招聘

(a) Please fill in the number of new recruits in the past 12 months
請填寫過去十二個月內，新招聘的僱員人數

Number of Technologists 技師人數	Number of Technicians 技術員人數	Number of Craftsmen 技工人數	Number of Operatives 操作工人數	For official use only 此 欄 毋 須 填 寫
40 41 42 43	44 45 46 47	48 49 50 51	52 53 54 55	56

(b) Number of recruits who have performed electronics services related duties in their last jobs from item 8(a) above
上列(a)項中，在剛離職的工作崗位上曾執行電子業相關職務的人數

Number of Technologists 技師人數	Number of Technicians 技術員人數	Number of Craftsmen 技工人數	Number of Operatives 操作工人數
57 58 59 60	61 62 63 64	65 66 67 68	69 70 71 72

2.   Employees Left
僱員離職

Please fill in the number of employees who had left your establishment in the past 12 months
請填寫過去十二個月內，離職的僱員人數

Number of Technologists 技師人數	Number of Technicians 技術員人數	Number of Craftsmen 技工人數	Number of Operatives 操作工人數	For official use only 此 欄 毋 須 填 寫
73 74 75 76	77 78 79 80	81 82 83 84	85 86 87 88	89

3.   Skills an Employee Need to Enhance
僱員需加強培訓的技能

Please indicate the three most important skills that your employees need to enhance. (Please see the table on the right for the choice of skills.)
你認為貴機構現有僱員在那三方面技能最需要加強培訓。(請參閱右面的編號表以選擇技能。)

Technologist 技師

90	91	92	93	94	95	96	97	98

Technician 技術員

99	100	101	102	103	104	105	106	107

Craftsman 技工

108	109	110	111	112	113	114	115	116

Code 編號	Types of skills / knowledge / attributes 技能/知識/個人特質的類別

Management skills 管理技能
- 101 Production and engineering management 工業生產及工程管理
- 102 Marketing management 經銷管理
- 103 Project management 計劃管理
- 104 Quality management 品質管理
- 105 Purchasing management 採購管理
- 106 People management 人事管理
- 107 Leadership skills 領導能力

China-related knowledge and world vision 有關中國的知識及世界視野
- 201 Social and economic development in the mainland of China 在中國內地的社會和經濟發展
- 202 Laws and regulatory restrictions for access to China's market 進入中國市場的法律和規條限制
- 203 Trade practices in the mainland of China 在中國內地的營商常規
- 204 Cross-cultural knowledge 跨文化的知識
- 205 World vision 世界視野

Language skills 語文技能
- 301 Spoken English 英語會話
- 302 Written English 英文書寫能力
- 303 Putonghua 普通話
- 304 Written Chinese 中文書寫能力

Interpersonal and intrapersonal skills for the workplace 工作間的人際及個人才能
- 401 Problem solving 解決問題
- 402 Creativity 創意力
- 403 Critical thinking 批判思考能力
- 404 Communication skills 溝通技巧
- 405 Team building 團隊建立
- 406 Time management skills 時間管理技巧
- 407 Optimism/Positive 樂觀／積極
- 408 Self-esteem 自尊
- 409 Perseverance 毅力
- 410 Change management skills 變革管理技巧
- 411 Customer services skills 客戶服務技巧
- 412 Numerical skills 數學運用技巧
- 413 Ability to learn/adapt new skills/knowledge 學習或適應新技能、新知識的能力
- 699 Others * 其他 *

* Please specify if skills code = '699'.
* 若技能編號 = '699'，請說明。

For official use only
此 欄 毋 須 填 寫

Est No. _____

The 2010 Manpower Survey of the
Electronics Industry

電 子 業 二 零 一 零 年 人 力 調 查

Explanatory Note

附 　 註

1. Please ignore the numbers of the row immediately beneath the headings.   They are purely for data processing.
    每行標題下的號碼只供資料處理用，請毋須理會。

2. Before completing the questionnaire, please read carefully the job titles and job descriptions in Appendix C.
    填寫調查表前，請先詳閱附錄 C 所列的職稱與工作說明。

3. Please complete the columns ('A' to 'F') of the questionnaire and insert a zero (0) for any column not applicable to your establishment.
    請填寫表內各欄（「A」至「F」），並在不適用於貴機構的各欄內填入（０）符號。

4. Please fill in information as accurate as possible because the information collected from this survey is vital for determining the manpower requirements of the industry in order that the Electronics and Telecommunications Industry Training Board can make meaningful recommendations to Government on how to meet training needs.
    請填入準確資料，因是項資料對於確定本業的人力需求極為重要，而電子業及電訊業訓練委員會亦將以此為根據，向政府提供解決訓練需求的建議。

5. Job Titles - Column 'A'
    職稱 —— 「A」欄
    (a) The job titles and code numbers are pre-printed.
         職稱及職務編號已代為印上。
    (b) Please add in column 'A' titles of any technical jobs not mentioned in Appendix C, and briefly describe them and indicate their skill levels.
         如貴機構另有技術性職務名稱未載於附錄 C 者，請一併填入「A」欄內，並扼要說明其工作性質及技能等級。
    (c) Please classify an employee according to his/her main duty irrespective of any additional secondary duties he/she may be required to perform (e.g. a technician, who works mainly as an electronics technician but is also required to perform the work of a draughtsman occasionally, should be classified as an electronics technician and not as a draughtsman).
         請根據僱員的主要職務分類，而不以其兼任的其他職務分類（例如，一名技術員的主要職務為電子技術員，但有時須擔任繪圖員的工作，則應歸類為電子技術員而非繪圖員）。

6. Average Monthly Income - Column 'B'
每月平均收入 —— 「B」欄
Please enter into this column the code for average monthly income range for each type of employees. The income should include basic wages, guranteed year-end bonus, regular overtime pay, cost of living allowance, meal allowance etc., if any. If you have more than one employee doing the same job, please enter the average figure. (Please refer to the codes in the last column of the questionnaire.)
請在「B」欄填入每類僱員的每月平均收入編號，這包括底薪固定發放的年終花紅、定期超時工作工資、生活津貼、膳食津貼等。若從事同類工作的僱員多於一名，則請取其平均數字。(請參閱調查表最後一欄的類別編號)

7. Number Employed at Date of Survey (Excluding Trainees) - Column 'C'
現有僱員人數（受訓者除外） —— 「C」欄
Please fill in the total number of employees (excluding trainees and apprentices) in your establishment.
請將貴機構目前所僱用的全部僱員人數（受訓者及學徒除外）填入此欄。

8. Forecast of Number Employed 12 Months from Now
(Excluding Trainees) - Column 'D'
預計十二個月後的僱員人數（受訓者除外） —— 「D」欄
The forecast of number employed means the likely number of employees (excluding trainees and apprentices) you will be employing 12 months from now.
預計僱員人數指貴機構於十二個月後可能僱用的員工總數（受訓者及學徒除外）。

9. Number of Vacancies at Date of Survey (Excluding Trainees) - Column 'E'
現有空缺額（受訓者除外） —— 「E」欄
Please fill in the number of existing vacancies (excluding those for trainees and apprentices).
請填入貴機構現有的空缺額（受訓者及學徒的空缺數目除外）。
'Existing vacancies' refer to those unfilled, immediately available job openings for which the establishment is actively trying to recruit personnel at date of survey.
「現有空缺額」是指該職位仍懸空，須立刻填補，而現正積極招聘人員填補。

10. Number of Trainees at Date of Survey - Column 'F'
現有受訓者人數 —— 「F」欄
Please fill in the total number of employees undergoing training.
請將正在受訓的僱員人數填入此欄。

11. Internal Promotion
內部晉升
An internal promotion is the promotion of an employee to a higher level job by virtue of his/her performance or abilities. Please fill in the no. of internal promotion from "Technician to Technologist", from "Craftsman to Technician" and from "Others to Craftsman" in the past 12 months in the respective columns.
內部晉升指一名僱員由於表現良好或具工作才能而獲晉升至較高級職位。請將過去十二個月貴機構內部由技術員晉升至技師、由技工晉升至技術員，以及由其他職級晉升至技工的人數填入所屬欄內。

12. Hong Kong Technical Personnel Dispatched Outside Hong Kong
遣派香港以外的香港技術人員

Please enter the number of technologists, technicians and craftsmen paid by Hong Kong who had been dispatched to work for more than half year outside Hong Kong <u>during the 12 months prior to the survey</u>.
請填寫<u>調查前十二個月內</u>，由香港支薪而被遣派往外地，工作超過半年的技師、技術員及技工數目。

13. Education and Training an Employee Should Have
僱員宜有的教育及訓練

The purpose of this column is to solicit your view on the education and training which an employee in a particular job should have if he/she were to carry out his/her work competently.　(Please refer to the codes in the same page of the questionnaire.)
此欄目的在調查貴機構的意見：各類職位的僱員宜具備何種教育及訓練，才能勝任其工作。（請參閱調查表同一頁的類別編號）。

14. Recruitment
招聘
 (a)　Please enter the number of new recruits in the past 12 months;
　　　請填寫過去十二個月內，貴機構新招聘的僱員人數；
 (b)　and the number of recruits who have performed electronics services related duties in their last jobs from items (a).
　　　及在上列 (a) 項中，入職前是從事電子業相關職務的人數。

15. Employees Left
僱員離職

Please enter the number of employees who had left your establishment in the past 12 months.
請填寫過去十二個月內，貴機構離職的僱員人數 。

16. Skills an Employee Need to Enhance
僱員需加強培訓的技能

Please indicate the <u>three most important skills that your employees need to enhance</u>. (Please refer to the codes in the same page of the questionnaire.)
此欄目的在調查貴機構的意見：各類職位的<u>僱員在那三方面技能最需要加強培訓</u>。（請參閱調查表同一頁的類別編號）。

17. Example
例子

To facilitate proper completion, an example is given below for your reference.
為協助閣下填表，現將例子附錄於後，以供參考。

(A) Job 工作			(B) Average Monthly Income 每月平均收入	(C) Number Employed at Date of Survey (excl. trainees) 現有僱員人數（受訓者除外）	(D) Forecast of Number Employed 12 Months from Now (excl. trainees) 預計十二個月後僱員人數（受訓者除外）	(E) Number of Vacancies at Date of Survey (excl. trainees) 現有空缺額（受訓者除外）	(F) Number of Trainees at Date of Survey 現有受訓者人數
Title 職稱	Rec. Type	Job Code 職位編號	Code 編號				
For Official Use Only → 此欄毋須填寫	1	8-10	11	12-15	16-19	20-22	23-25
TECHNOLOGIST LEVEL 技師級							
1 Electronics Engineer 電子工程師	2	1 0 1	8	5	6	1	1
2 Electrical Engineer 電機工程師	2	1 0 2	7	2	2	0	1
3 Mechanical Engineer 機械工程師	2	1 0 3	7	2	2	0	0
4 Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	2	1 0 4	7	1	1	0	0
5 Chemical Engineer 化學工程師	2	1 0 5					
6 Product/Graphic Designer 產品／平面設計員	2	1 0 6					
7 System Analyst 系統分析員	2	1 0 7					
TECHNICIAN LEVEL 技術員級							
8 Electronics Technician 電子技術員	2	2 0 1	6	3	4	1	1
9 Mechanical Technician 機械技術員	2	2 0 2	5	1	1	0	0
10 Draughtsman 繪圖員	2	2 0 3	4	2	2	0	0
11 Manufacturing/Quality Assurance Technician 製造／品質保證技術員	2	2 0 4					
12 Supervisor/Foreman/Leader 監督／管工／組長	2	2 0 5					
13 Programmer 程式編製員	2	2 0 6					
14 Web Developer/Designer 網站開發員／設計員	2	2 0 7					
15 Sales Technician 推銷技術員	2	2 0 8					
CRAFTSMAN LEVEL 技工級							
16 Cable Jointer/Wireman 電纜接駁技工／駁線技工	2	3 0 1					
17 Electronics Craftsman 電子技工	2	3 0 2	3	3	4	1	1
18 Electrician 電氣技工	2	3 0 3	3	1	1	0	0
19 Mechanic 技工	2	3 0 4					
OPERATIVE LEVEL 操作工級							
20 Operator 生產線操作工	2	4 0 1	2	5 0	5 5	5	0
21	2						
22	2						
23	2						
24	2						
25	2						

Average Monthly Income 每月平均收入

Enter in column B employee's average monthly income range according to the following codes :

請將僱員的每月平均收入幅度按照下列類別編號填入B欄內：

Code 編號	Average Monthly Income Range 每月平均收入幅度
1	Under $6,001 以下
2	$6,001 - $8,000
3	$8,001 - $10,000
4	$10,001 - $15,000
5	$15,001 - $20,000
6	$20,001 - $25,000
7	$25,001 - $30,000
8	Over $30,000 以上

Remark 備註

Note 1 If additional lines are necessary, please tick here ☐ and enter on supplementary sheet(s).
附註一 如此頁填滿，請先將（✔）號填入此 ☐ 內，然後在附頁繼續填寫 。

Note 2 The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.
附註二 「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

JOB DESCRIPTIONS OF PRINCIPAL JOBS IN
THE ELECTRONICS INDUSTRY
電子業主要職務工作說明

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNOLOGIST LEVEL 技師級		
101	Electronics Engineer [Electronics Sales / Support Engineer, Telecommunications Engineer] 電子工程師 [電子推銷／支援工程師，電訊工程師]	Carries out one or more of the following activities: research into electronic engineering / telecommunication engineering problems, design of, technical sales / support, and advice on electronic equipment and systems, components and products, and planning and supervision of their development, production, construction, installation, operation and maintenance. Usually specialises in one or more of the following: (i) computer systems; (ii) consumer electronic products; (iii) electronic instruments and equipment; (iv) semiconductor and electronic components; (v) telecommunication systems; (vi) multimedia electronics, audio-visual and entertainment systems; (vii) other electronic engineering fields. 擔任下列一項或多項工作：研究電子工程／研究電訊工程方面的問題；負責電子設備及系統、零件及產品的設計、技術推銷／支援及顧問工作；策劃及督導電子設備及系統、零件及產品的發展、生產、構造、安裝、操作及保養工作。通常與下列專門範疇有關： (i) 電腦系統； (ii) 電子消費產品； (iii) 電子儀器及設備； (iv) 半導體及電子零件； (v) 電訊系統； (vi) 多媒體電子、影音及娛樂系統； (vii) 電子工程其他方面的工作。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNOLOGIST LEVEL (Continued) 技師級（續）		
102	Electrical Engineer 電機工程師	Designs and advises on electrical equipment and systems, and plans, and supervises their development, construction, installation, operation, maintenance and repair. 設計電器及電機系統，並就該方面提供意見；策劃及監督電器及電機系統的發展、構造、安裝、操作、保養及維修。
103	Mechanical Engineer 機械工程師	Designs and advises on plant, mechanical parts, moulds and equipment, machinery and tools, and plans and supervises their development, construction, installation, operation, maintenance and repair. 設計廠房、機械配件、工模及設備、機器及工具，並就該方面提供意見；策劃與監督其中的發展、構造、安裝、操作、保養及維修。
104	Manufacturing / Quality Assurance Engineer [Industrial Engineer, Quality Control Engineer] 製造／品質保證工程師 [工業工程師，品質控制工程師]	Carries out one or more of the following activities: (i) Plans, directs and supervises all technical aspects of the manufacturing process to ensure the most efficient and economical means of operation and the maintenance of quality standards; (ii) Plans, directs and supervises the quality assurance / control at all phases of manufacturing, including testing and measurement, of incoming materials and parts, work-in-progress, and finished products to ensure compliance with standards, specifications, safety and environmental regulations. 擔任以下一項或多項工作： (i) 策劃、指導及監督製造程序的各種技術工作，確保採用最快捷經濟的生產方式，並且保持品質標準； (ii) 策劃、指導及監督各製造階段的品質保證／控制工作，包括測試及量度交來物料與配件、半製成品及製成品，確保產品符合標準、規格、安全與環保條例。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNOLOGIST LEVEL (Continued) 技師級（續）		
105	Chemical Engineer	Designs and advises on manufacturing processes in which chemical changes occur, and plans and supervises their development, construction, installation, operation and maintenance to ensure compliance with standards, specifications, and safety and environmental regulations.
	化學工程師	設計能產生化學變化的製造程序，並就該方面提供意見；策劃及監督其發展、構造、安裝、操作及保養，確保符合標準、規格、安全與環保條例。
106	Product / Graphic Designer	Originates and develops ideas to design, create, modify and arrange the form of manufactured products, layouts and containers for the products based on factors such as design-function relationship, knowledge of design, art concepts, market and pricing characteristics, client specifications, method and cost of production to achieve aesthetically pleasing and functional effect for the products.
	產品／平面設計員	能根據設計與功能的關係、設計知識、美術概念、市場與價格特性、顧客規格、生產方法及成本等因素進行創作，並加以發揮，以便設計、創作、修改及安排製成品的形狀、結構及包裝，務求產品既美觀又實用。
107	System Analyst [Software Engineer]	Carries out one or more of the following activities: (i) Works closely with user personnel to identify problems, review methods and specify and evaluate information technology (IT) solutions; (ii) In accordance with product specifications, designs system firmware / software using high level and/or assembler languages for electronics, microprocessors, microcomputers and embedded systems.
	系統分析員 [軟件工程師]	擔任以下一項或多項工作： (i) 與用戶部門緊密合作，確定問題、檢討方法、說明和評估資訊科技的解決辦法； (ii) 依據產品規格，使用高階語言及／或匯編語言，為電子、微處理器、微型電腦及嵌入式系統設計軟件及／或系統軟件。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN　LEVEL　　技術員級	
201	Electronics Technician [Electronics / Maintenance / Service Technician, Telecommunications Technician, Computer / Network Technician, Audio-Visual Technician, Electronic Support Technician]	Performs technical tasks, normally under the direction and supervision of an electronics / telecommunications engineer, contributory to design, development, manufacture, technical support, construction, installation, operation, maintenance and repair of: (i)　Electronic and electrical products, equipment and systems, such as consumer electronics, home appliances, healthcare electronics, toys, and watch / clock; (ii)　Telecommunication systems and equipment, such as telephone, digital broadcasting, high-definition electronic media, wireless / microwave / satellite communication, mobile communication and data communication systems; (iii)　Computer and multimedia networks, systems and peripherals; (iv)　Audio-visual, entertainment and associated equipment and systems.
	電子技術員 [電子／保養／維修技術員，電訊技術員，電腦／網絡技術員，影音技術員，電子支援技術員]	通常在電子／電訊工程師的督導下擔任技術工作，如參與設計、發展、製造、技術支援、構造、安裝、操作、保養、修理： (i)　電子及電機產品、器材及系統，例如消費電子產品、家居電器、保健電子產品、玩具及鐘錶； (ii)　電訊系統及器材，例如電話、數碼廣播、高清電子媒體、無線電／微波／衛星通訊、流動通訊及數據通訊系統； (iii)　電腦及多媒體網絡、系統及周邊設備； (iv)　影音、娛樂及附屬設備與系統。
202	Mechanical Technician	Performs technical tasks, normally under the direction and supervision of a mechanical engineer, contributory to design, development, construction, installation, operation, maintenance and repair of plant, mechanical parts and equipment, machinery and tools.
	機械技術員	通常在機械工程師的督導下擔任技術工作，如參與設計、發展、構造、安裝、操作、保養、修理廠房、機械配件及設備、機器及工具。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
		TECHNICIAN LEVEL (Continued) 技術員級（續）
203	Draughtsman 繪圖員	Prepares detail and assembly drawings and circuit diagrams according to design specifications. 按照設計規格繪製明細圖、裝配圖及線路圖。
204	Manufacturing / Quality Assurance Technician [Quality Control Technician] 製造／品質保證技術員 [品質控制技術員]	Performs technical tasks, normally under the direction and supervision of a manufacturing / industrial or a quality assurance / control engineer, contributory to: (i) The efficient and economical operation of the manufacturing process and the maintenance of quality standards; (ii) Quality assurance / control at all phases of manufacturing including testing and measurement of in-coming materials and parts, work-in-progress, and finished products to ensure compliance with standards and specifications, and safety and environmental regulations. 通常在製造／工業或品質保證／控制工程師的監督下擔任： (i) 製造程序中的技術工作，協助以最快捷經濟的方式運作，並且維持產品質素； (ii) 技術工作，協助各製造階段的品質保證／控制事項，包括測試及量度來料與配件、半製成品及製成品，確保產品符合標準、規格、安全與環保條例。
205	Supervisor / Foreman / Leader [Junior Supervisor] 監督／管工／組長 [初級監督]	Performs supervisory duties contributory to the planning and allocation of tasks to workers and trainees, and to the production, inspection, installation, operation, maintenance and repair of components, products, equipment and systems; OR Organises and takes charge of a group or groups of operatives in a section, normally under the direction of a supervisor / foreman. 擔任監督工作，如參與策劃、向工人及受訓者分配工作，以及參與生產、檢查、安裝、操作、保養、修理零件、產品、器材與系統； 或 通常在監督／管工指導下，安排及主管部門內一組或多組操作工的工作。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN LEVEL (Continued) 技術員級（續）		
206	Programmer [Software Technician] 程式編製員 [軟件技術員]	Develops computer programmes and systems to implement embedded systems / software design, normally under the direction and supervision of a software engineer / system analyst. 通常在軟件工程師／系統分析員的督導下研究嵌入式系統／電腦程式，以便推行電腦系統及軟件設計。
207	Web Developer / Designer 網站開發員／設計員	In the mixed technical and creative works, uses tool set to design and create web pages / sites, 2D / 3D graphics and animation and/or other multimedia contents for integration to IT applications according to business requirement, strategy and direction. 按照業務要求、策略及方向，結合科技與創作，使用工具套設計及製作網頁／網站、二維／三維圖像動畫或其他多媒體內容，以便配合電腦應用軟件使用。
208	Sales Technician [Electronic Sales Technician, Electronic Merchandising Technician] 推銷技術員 [電子推銷技術員／電子採購技術員]	Updates / studies / analyses electronic, technical and functional knowledge as well as contemporary trend and development of products, systems, equipment and components from the demands of electronics market, proposes and demonstrates suggestions / follows up orders according to the needs of clients and customers, and liaises with departments and suppliers to provide suitable alternatives in view of the market. Usually involves in one or more of the following: (i) consumer electronics, home appliance and healthcare electronics; (ii) telecommunication systems and equipment; (iii) computer and multimedia networks, systems and peripherals; (iv) audio-visual, entertainment and associated equipment and systems. 更新／學習／分析電子、技術及功能知識，以及市面上的潮流時興新穎的產品、系統、設備及零件；因應顧客需要而提供意見、示範產品及跟進訂單；與其他部門及供應商聯繫以提供適當意見。通常會與下列範疇有關： (i) 消費電子產品、家居電器及保健電子產品； (ii) 電訊系統及器材； (iii) 電腦及多媒體網絡、系統及周邊設備； (iv) 影音、娛樂及附屬設備與系統。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
	CRAFTSMAN LEVEL 技工級	
301	Cable Jointer / Wireman 電纜接駁技工／ 駁線技工	Lays, joints, connects, terminates and maintains underground, submarine, surface and aerial telecommunication cables and wires. 敷設、接駁、端接及保養地底、海底、地面及架空電訊電纜。
302	Electronics Craftsman [Audio Visual, Electronic Servicing, Electronic System Installation, Telecommunications and Surveillance Technical Assistant] 電子技工 [影音、電子維修、電子系統安裝、電訊及監控技術助理]	Carries out one or more of the following activities: (i) Installs, services and maintains consumer electronics, audio-visual products, multimedia and entertainment electronic equipment and systems, In-building Coaxial Cable Distribution System, telecommunications and surveillance systems; (ii) Diagnoses, locates and repairs faults in the maintenance of electronic devices and products, systematically records these faults and recommends changes to minimize such occurrence; (iii) Installs, inspects, tests, repairs, calibrates and maintains electronic, electrical and mechanical instruments, meters, equipment and systems. 擔任以下一項或多項工作： (i) 安裝、保養及及維修消費電子產品、影音產品、多媒體和娛樂電子設備與系統、大廈內同軸電纜分配系統、電訊及監控系統； (ii) 在維修電子裝置及產品的過程中，查出及修理所出現的毛病，有系統地記錄下來，並且建議如何盡量減少毛病出現； (iii) 安裝、查驗、測試、修理、校準及保養電子、電機及機械儀器、儀錶、設備及系統。
303	Electrician 電氣技工	Installs, maintains, tests and repairs electrical wiring, devices and equipment, and building services in buildings and other structures in accordance with regulations and specifications. 按照條例及規格安裝、保養、測試及修理屋宇電線、電器及其他設備。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
CRAFTSMAN LEVEL (Continued) 技工級（續）		
304	Mechanic [Maintenance Mechanic / Fitter / Machinist, Tool and Die Maker, Mould and Die Maker and Repairer] 技工 [保養技工／裝配打磨技工，機床工，工具及工模製造技工，工模製造及修理技工]	Carries out one or more of the following activities: (i)　Fits, assembles, installs, repairs and maintains plant and machinery and makes replacement parts when required; (ii)　Sets up and operates machine tools to produce components according to specifications; (iii)　Makes, maintains and repairs press tools, dies, cutting tools, gauges, jigs and fixtures according to drawings and other specifications; (iv)　Makes, maintains and repairs moulds and dies for plastics processing machines according to drawings and other specifications. 擔任以下一項或多項工作： (i)　打磨、裝配、安裝、修理、保養廠房及機器，並於需要時製作更換配件； (ii)　按照規格裝設及操作機床，以生產零件； (iii)　按照圖則及其他規格，製造及維修啤孔工具、工模、切削工具、量規及夾具； (iv)　按照圖則及其他規格，製造及修理塑膠機的工模。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
OPERATIVE LEVEL 操作工級		
401	Operator [Assembler, Soldering Worker, Aligner / Tester, Quality, Assurance / Control Operator, Machine Operator / Attendant, Packer, Stock Handler, Electronic Data Processing Operator, General Worker]	Carries out any one of the operative jobs in assembly line in the areas of: (i) Assembles parts in the manufacture of electronics components (semiconductor, computer memory plane etc.) or assembles parts and components into printed circuit boards, modules and finished products, prepares materials by cutting, coats and paints protective or decorative materials onto parts or components; (ii) Performs proper soldering at all solder joints by hand or machine; (iii) Aligns, tests and inspects electronics products on production lines; (iv) Assists the quality assurance / control technician in the inspection of incoming parts and finished products before packaging according to a predetermined quality standard; (v) Operates various previously set-up processing machines, fixtures, continuous plating and etching baths, polishing machine and coil winding machines etc; (vi) Packs finished products into boxes, crates or other containers; (vii) Handles components, parts issued to and returned from assembly line. (viii) Sets, operates and controls data processing and/or data-switching systems, including all peripheral units according to operating instructions; operates data entry machines, which translate manually prepared data into computer readable format and store them into media, verifies / corrects entry data according to standard procedure; (ix) handles odd jobs and undertake other manual work.

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
OPERATIVE　LEVEL　(Continued)　操作工級（續）		
	生產線操作工 [裝配工，焊錫工， 校整／測試工，品質保證 ／控制工，機器操作工／ 看值工，包裝工，物料搬 運工，電腦操作員／雜 工]	擔任以下一項或多項工作： (i)　裝配各種零件以製造電子元件（半導體、記憶板等等）或將零件及元件裝配在印刷線路板、模組及製成品上；切割材料；塗膠及鬆保護或裝飾塗料於零件或元件上； (ii)　用手或機器焊接所有焊點； (iii)　校整、測試及檢查生產線上的電子產品； (iv)　協助品質保證／控制技術員，依照預定的品質標準檢查交來配件，並在包裝前檢查製成品； (v)　操作各類已調校妥當的加工機械、夾具、連續運作電鍍及蝕刻設備、磨光機及繞線機等等； (vi)　以木箱、紙盒或其他容器包裝製成品； (vii)　負責搬運裝配工場的元件及零件； (viii)　根據工作指示，調校、操作及控制數據處理及／或數據交換系統，包括周邊設備；操作數據輸入機（可將人手編製的數據翻譯為可供電腦閱讀的資料，並將數據貯存在電腦卡、磁帶、紙帶或磁盤內）；根據標準程序核對／更正輸入的數據； (ix)　擔任雜務及其他勞力工作。

Remark: [　　　　　] Equivalent

註：　　　[　　　　　]　其他名稱