



**STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN  
(NATIONAL OCCUPATIONAL SKILLS STANDARD)**

**ADVANCED CELLULAR PHONE REPAIR  
LEVEL 3**



**Jabatan Pembangunan Kemahiran  
Kementerian Sumber Manusia, Malaysia**

**STANDARD PRACTICE  
NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR:  
ADVANCED CELLULAR PHONE REPAIR  
LEVEL 3**

**1. INTRODUCTION**

This is a new NOSS developed for Advanced Cellular Phone Repair under the sector of Electrical & Electronic, Telecommunication. Base on the 3<sup>rd</sup> Industrial Master Plan and The Tenth Malaysia Plan direction, the need for skilled personnel from the Telecommunication Industry is in great demand.

The Telecommunication Industry is expanding rapidly with the introduction of the latest services and technology. This development has become a catalyst for the growth of the nation's commercial and industrial sectors. The integration of the telecommunication and computer industries also resulted in the rapid growth of sophisticated technology which ushers in a new Information Technology and Multimedia. In addition, the telecommunication sector as an industry in its own right has gone through rapid growth too and contributed much to the nation's economic development.

The Malaysia Communications and Multimedia Commission (MCMC) is the regulator for the converging communications and multimedia industry responsible for the technical regulation, which includes efficient frequency spectrum assignment, the development and enforcement of technical codes and standard, and the administration of numbering and electronic addressing. At the time it was created its key role was the regulation of the communication and multimedia industry based on the powers provided for in the Malaysian Communications and Multimedia Commission Act (1998). Pursuant to these Acts the role of the MCMC is to implement and promote the Government's nation policy objectives for the communications and multimedia sector. The MCMC are also charged with overseeing the new regulatory framework for the converging industry of telecommunications, broadband, broadcasting and on line activities.

Advanced Cellular Phone Repair skills career provides repairing knowledge in electronics, communications, mobile phones software and hardware. Mobile phone and smart phones are repaired using standard operation procedure. Advanced Cellular Phone Repair covers the job scope of maintenance, repair and operation for various models of mobile phone.

This NOSS document shows the structured, equipment and skill career path of Advanced Cellular Phone Repair personnel. It provides structured set of activities that enables a person who aspires to achieve competency in this particular occupation, ultimately enhancing him or her on a career in telecommunication industry.

Standard Practice and Standard Content are part of NOSS document. This Job Areas being develop are based on the Occupational Analysis. This document covered the competency standard of Cellular Phone Core Network, Operating and skill that are currently is the priority in this industry and the panel of experts had concluded that these job areas in this industry due to most of the task are performed in a variety of contexts,

most of which are complex. To produce skilled workers in this industry, the needs for structured training are essential. Therefore this NOSS is developed focusing on the Cellular Phone Core Repairing activities. A telecommunication expertise works to ensure that all mobile phone systems are set up correctly and operating as required.

The experts in this industry can also pursue careers in other industries in Malaysia or international. They also can be exported to the international market due to the increasing need of experts in the field. Hence, the development of this NOSS is essential for the industry to certain guidelines and standards based on the level of competencies that have been set by the industrial experts in this field.

Based on the workshop findings, it was decided that the entry level for Cellular Phone Network personnel career is at Level 2. The justification is based on the nature of work that requires competency in performing in variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of other is often required. Generally they work following instructions and project schedule that has been prepared on project basis as per term of reference.

This NOSS provides first-hand information to the workers regarding the telecommunication industry working environment. This NOSS also provides a career path and employment development for those involved in this industry.

#### **Pre-requisite**

Minimum requirement for those interested to enroll this course are as follows:

- Possess SKM Cellular Phone Repair Level 2

## **2. OCCUPATIONAL STRUCTURE**

Advanced Cellular Phone Repair (Level 3) personnel comes under the sub-sector of Telecommunication. Figure 1.0 and figure 1.1 shows the structured career path and area as below;

SECTOR	<b>ELECTRICAL &amp; ELECTRONIC, TELECOMMUNICATION &amp; BROADCASTING INDUSTRY</b>			
SUB SECTOR	<b>TELECOMMUNICATION</b>			
AREA	Cellular phone	Radio Access Network	Radio Frequency Network	Transmission Network
SUB AREA				
LEVEL 5	Cellular Phone Technical Executive	Radio Access Network Technical Executive	-	-
LEVEL 4	Cellular Phone Assistant Technical Executive	Radio Access Network Assistant Technical Executive	-	-
LEVEL 3	Cellular Phone Senior Technician	Radio Access Network Senior Technician	Radio Frequency Network Senior Technician	Transmission Network Senior Technician
LEVEL 2	Cellular Phone Technician	Radio Access Network Technician	Radio Frequency Network Technician	Transmission Network Technician
LEVEL 1	(No Level)	(No Level)	Mobile Telecommunication Junior Technician	

Fig. 1.0 Occupational Structure for Cellular Phone (Level 3)

## 2.1 Occupational Area Analysis

SECTOR	ELECTRICAL & ELECTRONIC, TELECOMMUNICATION & BROADCASTING INDUSTRY			
SUB SECTOR	TELECOMMUNICATION			
AREA	Cellular phone	Radio Access Network	Radio Frequency Network	Transmission Network
SUB AREA				
LEVEL 5	Cellular Phone Technical Advisor	Radio Access Network Technical Executive	-	-
LEVEL 4	Cellular Phone Assistant Technical Advisor	Radio Access Network Assistant Technical Executive	-	-
LEVEL 3	Advance Cellular Phone Repair	Radio Access Network Senior Technician	Radio Frequency Network Senior Technician	Transmission Network Senior Technician
LEVEL 2	Cellular Phone Repair	Radio Access Network Technician	Radio Frequency Network Technician	Transmission Network Technician
LEVEL 1	(No Level)	(No Level)	Mobile Telecommunication Junior Technician	

Fig. 1.1 Occupational Area Structure for Cellular Phone (Level 3)

### 3. DEFINITION OF COMPETENCY LEVEL

The NOSS is developed for various occupational areas. Candidates for certification must be assessed and trained at certain levels to substantiate competencies. Below is a guideline of each NOSS Level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia.

Malaysia Skills Certificate: Level 1	Competent in performing a range of varied work activities, most of which are routine and predictable.
Malaysia Skills Certificate: Level 2	Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and required individual responsibility and autonomy.
Malaysia Skills Certificate: Level 3	Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.
Malaysia Skills Diploma: Level 4	Competent in performing a broad range of complex technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present.
Malaysia Skills Advanced Diploma: Level 5	Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources features strongly, as do personal accountabilities for analysis, diagnosis, planning, execution and evaluation.

#### **4. MALAYSIAN SKILLS CERTIFICATION**

Candidates after being assessed and verified and fulfilled Malaysian Skills Certification requirements shall be awarded with Diploma Kemahiran Malaysia (DKM) for Level 4 and Diploma Lanjutan Kemahiran Malaysia (DLKM) Level 5.

#### **5. JOB COMPETENCIES**

Advanced Cellular Phone Repair (L3) competent in performing:

- Advance Phone Hardware Repair
- Advance Phone Software Repair
- Supervisory Functions

Optionally advances Cellular Phone repair are competent in performing the following elective competency:-

- Cellular Phone Research and Development
- Entrepreneurship Activities

#### **6. WORKING CONDITIONS**

Generally, most Cellular Phone Repairer requires a good background in basic electronics and computers, is considered an asset for this career. Personnel at this level must be aware of the latest technological advancements in telecommunications technologies.

#### **7. EMPLOYMENT PROSPECTS**

As Malaysia had identified in the 3<sup>rd</sup> Industrial Master Plan and started in the Tenth Malaysia Plan, telecommunication will be an important enabler for Malaysia to position itself at the international level. Employment growth in the telecommunication industry is significant and is always in demand.

Other related occupation with respect to employment opportunities are:

- Mobile Phone software Engineering
- Data Devices Specialist Engineering

Other related industrial with respect to employment opportunities are:

- Information Sector
- Education Sector
- Manufacturing Sector
- Business Service Sector
- Government Sector

## 8. TRAINING, INDUSTRIAL/PROFESSIONAL RECOGNITION, OTHER QUALIFICATIONS AND ADVANCEMENT

As for career advancement, most competent welders learn their craft on the job. They usually begin as qualified welders and gradually learn their new skills as they gain experience. Further certification may increase their chances of career advancement.

## 9. SOURCES OF ADDITIONAL INFORMATION

### 9.1. Local

- **Malaysia Communication and Multimedia Commission (MCMC)**  
Persiaran Multimedia  
63000 Cyberjaya  
Selangor Darul Ehsan  
Tel: 03-8688 8000  
Fax: 03-8688 1880  
Email: [admin@cmc.gov.my](mailto:admin@cmc.gov.my)
- **D LAN GROUP**  
799, Jalan Sultan Mahmud  
20400 Kuala Terengganu  
TERENGGANU  
Web: [www.dlangroup.com](http://www.dlangroup.com)  
Tel: 09-6315364  
Email: [admin@dlangroup.com](mailto:admin@dlangroup.com)
- **TRANSTEL TECHNOLOGIES**  
62c, Jalan Mega Mendung  
5<sup>th</sup> Miles Jalan Klang Lama  
58200 Kuala Lumpur  
Email: [myphonehub@yahoo.com](mailto:myphonehub@yahoo.com)
- **INSTITUT KEMAHIRAN MARA PERLIS**  
02400 Jalan Kaki Bukit  
Beseri Perlis  
Email: [z.adisharman@gmail.com](mailto:z.adisharman@gmail.com)  
Email: [9w2msj@gmail.com](mailto:9w2msj@gmail.com)  
Tel:04-93480231  
Fax:04-9348023
- **HH ERA COMMUNICATION**  
4820 Jalan Pantai  
Taman Selat  
12000 Butterworth  
Pulau Pinang  
Email: [hheracom@gmail.com](mailto:hheracom@gmail.com)  
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Telefax: 04-3332959



**GLOBAL FIX GENERATION**

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Kem Kementah, Jalan Padang Tembak  
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Tel : 012-3671659

**DX CELLULAR COMMUNICATIONS**

Lot 11 Jalan Persiaran Permai  
Taman Puchong Permai  
47100 Puchong New Village  
Selangor  
Email: [acid-burn@singapore.com](mailto:acid-burn@singapore.com)  
Tel : 012-2462749

**MOBILE SOLUTION**

No 2 Blok 5  
Seksyen 16/2  
40200 Shah Alam  
Email:  
Tel : 014-7368760

**LCWIRA ENTERPRISE**

No 24A Jalan 63  
Pandamaran Jaya  
42000 Pelabuhan Klang  
Selangor  
Email: [tri\\_hsinhsan@yahoo.com](mailto:tri_hsinhsan@yahoo.com)  
Tel : 012-6460908

**WANSA PRIMA RESOURCES SDN BHD**

NO 14 Jalan CU 1  
Taman Chembong Utama  
71300 Rembau  
Negeri Sembilan  
Email: [afs\\_chembong@yahoo.com](mailto:afs_chembong@yahoo.com)  
Tel : 06-6851633

## 9.2 International

- Samsung  
Samsung Electronics (UK) Ltd  
Samsung House  
1000, Hillswood Drive  
Chertsey, Surrey KT16 0PS  
Tel : 01932 455 000
- Nokia  
Keilalahdentie 2-4  
P.O.Box 226  
FI-00045 Nokia Group  
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Fax. +358 7180 34003
- Black Berry  
Research In Motion  
295 Phillip Street  
Waterloo, Ontario  
Canada N2L 3W8  
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fax: (519) 888-7884
- CSL  
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152 Conant Street  
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Fax: + 1 978 922 1772  
info@cslint.com
- Sony Ericson Ltd.  
Unit 4, Midleton Gate  
Guildford Business Park  
Guildford  
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Phone: +44 1483 30 36 66  
Fax: +44 1483 30 35 37
- LG International Corporation  
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Tel: 03-2163 0288  
Fax: 03-2162 8960

- Apple  
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Tel : 408-996-1010  
Web : [www.apple.com/](http://www.apple.com/)
- MOTOROLA MOBILITY, Inc.  
600 North U.S. Highway 45  
Libertyville, Illinois 60048 USA  
Tel : +18475235000  
Web : [www.motorola.com/us/consumers/home](http://www.motorola.com/us/consumers/home)
- Microsoft Window
- Google (Android)
- AOL
- APEC

## 10. ACKNOWLEDGEMENT

The Director General of DSD would like to extend his gratitude to the organisations and individuals who have been involved in developing this standard.

**11. COMMITTEE MEMBERS FOR DEVELOPMENT OF STANDARD PRACTICE (SP),  
COMPETENCY PROFILE CHART (CPC)**

**ADVANCED CELLULAR PHONE REPAIR  
LEVEL 3**

<b>PANEL EXPERTS</b>		
1.	En. Mohd Hasbullah bin Mohd Mokhtar	Manager, Transtel Technologies
2.	Keow Seong Huat	Manager, Transtel Technologies
3.	En. Nor Ardilan Syah bin Abdullah	Manager, DLAN GROUP
4.	En. Che Ku Shaharonizam bin Che Ku Mat	Manager, DLAN GROUP
5.	En. Adisharman bin Rahmat	Vocational Instructor (PPLV) Institut Kemahiran Mara, Beseri (IKM)
6.	En. Mohamed Sofi bin Jamaluddin	Vocational Instructor (PPLV) Institut Kemahiran Mara, Beseri (IKM)
7.	En. Amil bin Md Isa	Manager, HH Era Communication
8.	En. Mohamad Ridhwan bin Mohd	Manager, Wan Buz Enterprise
9.	En. Nazri Nisham bin Samsudin	Manager, Nazfida Communication
<b>FACILITATORS</b>		
1.	Tn. Hj. Zaharudin bin Abdul Latif	JPK, Cyberjaya, Selangor
<b>CO – FACILITATORS</b>		
1.	En. Jefrizain bin Abdul Rasid	JPK, Cyberjaya, Selangor
2.	En. Faizal bin Abd Majid	JPK, Cyberjaya, Selangor

**12. COMMITTEE MEMBERS FOR DEVELOPMENT OF COMPETENCY PROFILE (CP)  
ADVANCED CELLULAR PHONE REPAIR  
LEVEL 3**

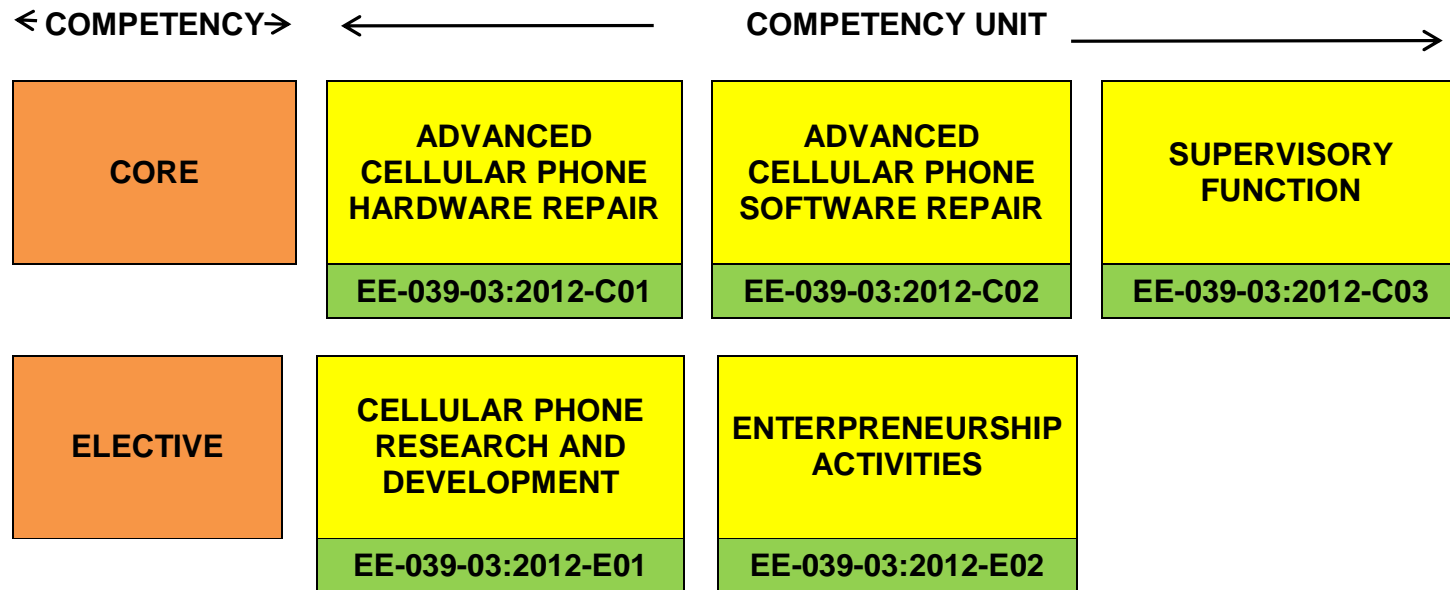
<b>PANEL EXPERTS</b>		
1.	En. Mohd Hasbullah bin Mohd Mokhtar	Manager, Transtel Technologies
2.	Keow Seong Huat	Manager, Transtel Technologies
3.	En. Nor Ardilan Syah bin Abdullah	Manager, DLAN GROUP
4.	En. Che Ku Shaharonizam bin Che Ku Mat	Manager, DLAN GROUP
5.	En. Adisharman bin Rahmat	Vocational Instructor (PPLV) Institut Kemahiran Mara, Beseri (IKM)
6.	En. Mohamed Sofi bin Jamaluddin	Vocational Instructor (PPLV) Institut Kemahiran Mara, Beseri (IKM)
7.	En. Amil bin Md Isa	Manager, HH Era Communication
8.	En. Mohamad Ridhwan bin Mohd	Manager, Wan Buz Enterprise
9.	En. Nazri Nisham bin Samsudin	Manager, Nazfida Communication
<b>FACILITATORS</b>		
1.	Tn. Hj. Zaharudin bin Abdul Latif	JPK, Cyberjaya, Selangor
<b>CO – FACILITATORS</b>		
1.	En. Jefrizain bin Abdul Rasid	JPK, Cyberjaya, Selangor
2.	En. Faizal bin Abd Majid	JPK, Cyberjaya, Selangor

**13. COMMITTEE MEMBERS FOR THE DEVELOPMENT OF CURRICULUM OF  
COMPETENCY PROFILE (CP)  
ADVANCED CELLULAR PHONE REPAIR  
LEVEL 3**

<b>PANEL EXPERTS</b>		
1.	En. Nor Ardilan Syah bin Abdullah	Manager DLAN GROUP
2.	En. Amil bin Md Isa	Manager HH Era Communication
3.	En. Mohamad Hisham Bin Hashim	Managing Director Wansa Prima Resources
4.	Pn. Junaina Bt. Md Karim	Manager Wansa Prima Resources
5.	En. Afandi Bin Amir	Manager Global Fix Generation
6.	En. Mohd Hilmizan Bin Mohd Saidi	Manager FW Mobile Solution
7.	En. Muhamad Fadzil Ariff Bin Mohd Sahir	Manager DX Cellular Communication
8.	En. Mohd Fauzi Bin Muhamad Sjarif	Managing Director DX Cellular Communication
9.	En. Muhammad Al Arqam Bin Ismail	Managing Director DX Cellular Communication
10.	En. Mohd Faisal Bin Amirudin	Manager Mobile Solution
11.	E. Hussin Bin Hassan	Technical Advisor LC Wira Enterprise
12.	En. Hazrul Ermey bin Raya	Marketing & sales Manager Global Fix Generation
13.	En. Mohd Azrin Bin Rajuni	Advisor Mobile Solution
<b>FACILITATORS</b>		
1.	Tn. Hj. Zaharudin bin Abdul Latif	JPK, Cyberjaya, Selangor
<b>CO – FACILITATORS</b>		
1.	En. Jefrizain bin Abdul Rasid	JPK, Cyberjaya, Selangor
2.	En. Faizal bin Abd Majid	JPK, Cyberjaya, Selangor
3.	En. Abdul Aziz bin Abdul Wahab	JPK, Cyberjaya, Selangor

## COMPETENCY PROFILE CHART (CPC)

<b>SECTOR</b>	<b>ELECTRICAL &amp; ELECTRONIC, TELECOMMUNICATION AND BROADCASTING INDUSTRY</b>		
<b>SUB SECTOR</b>	<b>TELECOMMUNICATION</b>		
<b>JOB AREA</b>	<b>ADVANCED CELLULAR PHONE REPAIR</b>		
<b>JOB LEVEL</b>	<b>LEVEL 3</b>	<b>JOB AREA CODE</b>	<b>EE-039-03:2012</b>



## COMPETENCY PROFILE (CP)

<b>Sub Sector</b>	<b>TELECOMMUNICATION</b>			
<b>Job Area</b>	<b>ADVANCED CELLULAR PHONE REPAIR</b>			
<b>Level</b>	<b>THREE (3)</b>			
<b>CU Title</b>	<b>CU Code</b>	<b>CU Descriptor</b>	<b>CU Work Activities</b>	<b>Performance Criteria</b>
<b>1 ADVANCE CELLULAR PHONE HARDWARE REPAIR</b>	EE-039-03:2012-C01	<p>The CU title describes the competencies in Advance Phone Hardware Repair.</p> <p>He or She is responsible in identifying fault, diagnose, repair, testing and commission faulty phone.</p> <p>The person who is competent in this CU shall be able to Troubleshoot Advanced Hardware fault, replace faulty cellular phone Component and Verify cellular phone problem according to specification and meet client requirement.</p> <p>The outcome of this competency is cellular hand phone are serviced and repaired to excellent condition as per manuals.</p>	<ol style="list-style-type: none"> <li>1. Troubleshoot Advanced Hardware Fault</li> <li>2. Replace faulty cellular phone Component</li> <li>3. Verify cellular phone problem</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Advance Hardware fault are identified and rectified according SOP.</li> <li>1.2 Schematic diagram interpreted.</li> <li>1.3 Cellular phone function navigated.</li> <li>1.4 Troubleshooting techniques applied.</li> <li>2.1 Faulty component for replacement are identified</li> <li>2.2 Component replaced and changed as per user manual</li> <li>2.3 Phone component is function as per SOP</li> <li>3.1 Hand phone are tested as per manuals</li> <li>3.2 Hand phone are commissioned according to factory specifications.</li> <li>3.3 Cellular Phone functioning as per SOP</li> </ol>



<p><b>2. ADVANCE CELLULAR PHONE SOFTWARE REPAIR</b></p>	<p>EE-039-03:2012-C02</p>	<p>The CU title describes the competencies in Advance Cellular Phone Software Repair.</p> <p>He or She is responsible in identifying fault, diagnose, repair, test and commission faulty phone.</p> <p>The person who is competent in this CU shall be able to troubleshoot advanced Software fault, flash advanced cellular phone software, test and commission cellular phone according to specification and meet client requirement.</p> <p>The outcome of this competency is cellular hand phone are serviced and repaired to excellent condition as per manuals.</p>	<ol style="list-style-type: none"> <li>1. Troubleshoot advance software Fault</li>   <li>2. Flash advanced cellular phone software .</li>   <li>3. Test and commission cellular phone.</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Basic computer application applied.</li> <li>1.2 PC communication is set-up</li> <li>1.3 Phone models are differentiated</li> <li>1.4 Software tools complied</li> <li>1.5 Fault is identified and verified according to SOP</li>   <li>2.1 Type of model cellular phone identified</li> <li>2.2 Type of data cable identified</li> <li>2.3 Type of file selected</li> <li>2.4 Flashing technique applied as per flashing manual</li> <li>2.5 Operating System are restored to manufacturer's specification.</li>   <li>3.1 Testing and Commissioning procedure and techniques applied</li> <li>3.2 Test and commissioning equipment followed checklist</li> <li>3.3 Repaired Hand phone tested as per SOP.</li> <li>3.4 Software function according to factory specifications.</li> </ol>
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<p><b>3. SUPERVISORY FUNCTION</b></p>	<p>EE-039-03:2012-C03</p>	<p>The CU title describes the competencies in supervisory function.</p> <p>He or She is responsible in manage stock, perform daily operation, coordinate with customer and supplier and review operation guideline.</p> <p>The person who is competent in this CU shall be able to prepare operation schedule, perform technician job assessment, perform quality control on repaired hand sets, provide technical advice and implement safety and health procedure according to standard operation.</p> <p>The outcome of this competency is subordinates work function and company operations are supervised and monitored for smooth and excellent workshop operations and management.</p>	<ol style="list-style-type: none"> <li>1. Prepare operation schedule</li> <li>2. Perform technician job assessment</li> <li>3. Perform quality control on repaired Cellular Phone</li> <li>4. Provide Technical advice</li> <li>5. Implement safety and health procedure</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Operation schedule prepared according to SOP</li> <li>1.2 Job delegation, schedule management, stock record, job time line are identified</li> <li>2.1 Technicians job assessment met assessment check list</li> <li>2.2 Technicians competencies are evaluated as specification</li> <li>2.3 Technicians job activities followed SOP</li> <li>3.1 Quality spare parts are identified</li> <li>3.2 Work procedure followed ISO</li> <li>3.3 HP checked as per SOP</li> <li>3.4 Quality control process and procedure followed</li> <li>3.5 Hand phones are fully functioning according to SOP.</li> <li>4.1 Technical manual advise based on SOP</li> <li>4.2 Creative sourcing of new technical updates identified</li> <li>4.3 Technical sources updated</li> <li>5.1 SOP on Safety and health procedure are prepared according to OSHA</li> <li>5.2 Hazard free work environment are created</li> <li>5.3 Safety sign , posters and banner are posted.</li> <li>5.4 SHO implementation monitored</li> </ol>
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<p><b>4. CELLULAR PHONE RESEARCH AND DEVELOPMENT</b></p>	<p>EE-039-03:2012-E01</p>	<p>The CU title describes the competencies in research and development.</p> <p>He or She is responsible in software development, and hardware modifications.</p> <p>The person who is competent in this CU shall be able to develop software application and perform hardware modification,.</p> <p>The outcome of this competency is the latest and updated technologies in cellular phones is identified.</p>	<ol style="list-style-type: none"> <li>1. Develop software application</li>   <li>2. Perform hardware modification</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Basic computer applied</li> <li>1.2 PC communication set-up</li> <li>1.3 Phone model identified and differentiated</li> <li>1.4 Applications are develop according to specification.</li> <li>1.5 Software tools selected</li> <li>1.6 Software application are function</li>   <li>2.1 Tools and Equipment for hardware modifications identified</li> <li>2.2 Hardware modified using schematic and according to specification</li> <li>2.3 Hardware function according to SOP</li> <li>2.4 Circuit boards are bypassed using jumper wire as specifications</li> </ol>
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<p><b>5. ENTREPRENEURSHIP ACTIVITIES.</b></p>	<p>EE-039-03:2012-E02</p>	<p>The CU title describes the competencies in enterprenuership activities.</p> <p>He or She is responsible in managing the hp business operation starting from , management and marketing to achieve business goal.</p> <p>The person who is competent in this CU shall be able to manage Hp business, manage business accounts, perform bussiness marketing strategies and manage organisation human resources.</p> <p>The outcome of this competency is entrepreneurship skill in managing hand phone business are acquired covering operations, management and business goals. business management</p>	<p>1. Manage hp business</p> <p>2. Manage business accounts</p> <p>3. Perform Bussiness Marketing Strategies</p> <p>4. Manage organisation human resource</p>	<p>1.1 Business strategies identified  1.2 Organisation mgmt. skills applied  1.3 Public relations, networking estb  1.4 Market demand are identified and established.  1.5 Business marketing strategies are identified  1.6 Business are manage according to global requirement</p> <p>2.1 Cash flow account are established  2.2 Cash flow management applied  2.3 Company profit and loss are identified.  2.4 Final accounts are managed  2.5 Financial performance and statement are obtain</p> <p>3.1Product knowledge updated  3.2 Supply and demand identified  3.3 Bussiness modus operandi identified  3.4Bussiness networking &amp; links identified  3.5Client target group identified  3.6 Business operations, profit and loss evaluated</p> <p>4.1 Organisation chart, function and scope of work prepared  4.2 Work scheduling prepared  4.3 Staff recruitment and orientation Handled  4.4 Staff discipline &amp; welfare handled  4.5 Staff development planned</p>
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## CURRICULUM of COMPETENCY UNIT (CoCU)

<b>Sub Sector</b>	TELECOMMUNICATION						
<b>Job Area</b>	ADVANCED CELLULAR PHONE REPAIR						
<b>Competency Unit Title</b>	ADVANCED CELLULAR PHONE HARDWARE REPAIR						
<b>Learning Outcome</b>	<p>The person who is competent in this CU shall be able to service and repair cellular hand phone to excellent condition as per manuals. Upon completion of this competency unit trainees will be able to:-</p> <ul style="list-style-type: none"> <li>• Troubleshoot Advanced Hardware Fault</li> <li>• Replace Faulty Cellular Phone Component</li> <li>• Verify Cellular Phone Problem</li> </ul>						
<b>Competency Unit ID</b>	EE-039-3:2012:C01	<b>Level</b>	3	<b>Training Duration</b>	120 Hours	<b>Credit Hours</b>	12.0
<b>Work Activities</b>	<b>Related Knowledge</b>	<b>Applied Skills</b>	<b>Attitude / Safety / Environmental</b>	<b>Training Hours</b>	<b>Delivery Mode</b>	<b>Assessment Criteria</b>	
1. Troubleshoot Advanced Hardware fault.	<ul style="list-style-type: none"> <li>i. Equipment and tools</li> <li>ii. Cellular Phone schematic and User Manual</li> <li>iii. Cellular Phone Faulty and damage type</li> <li>iv. Standard Operation Procedure for hardware fault.</li> <li>v. Troubleshooting process &amp; procedures</li> </ul>			10 hours	Lecture	<ul style="list-style-type: none"> <li>i. Tools and equipment identified</li> <li>ii. Cellular Phone schematic and User Manual interpreted</li> <li>iii. Cellular Phone Fault and damage type determined</li> <li>iv. Standard</li> </ul>	

		<ul style="list-style-type: none"> <li>i. Operate tools and equipment</li> <li>ii. Understanding Phone schematic and User Manual</li> <li>iii. Determine Phone Faulty and damage type</li> <li>iv. Follow Standard Operation Procedure for hardware fault</li> <li>v. Apply troubleshooting process and procedures</li> <li>vi. Follow user manuals</li> </ul>	<p><u>Attitude :</u></p> <ul style="list-style-type: none"> <li>i. Creative Thinking</li> <li>ii. Patience</li> <li>iii. Time management skill</li> <li>iv. Meticulous in details</li> </ul> <p><u>Safety:</u></p> <ul style="list-style-type: none"> <li>i. Hazard free work environment</li> <li>ii. Avoid using flammable product</li> <li>iii. Proper ventilation</li> <li>iv. Correct chemical handling</li> <li>v. Use safety apparel</li> </ul>	30 hours	Demonstration & Observation	<ul style="list-style-type: none"> <li>Operation Procedure for hardware fault followed</li> <li>v. Troubleshooting process and procedures applied</li> <li>vi. User Manuals Followed</li> </ul>
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2. Replace Faulty Cellular Phone Component	<ul style="list-style-type: none"> <li>i. Equipment and tools</li> <li>ii. Type of component and functions</li> <li>iii. Standard Operation Procedure for changing phone component.</li> <li>iv. Assemble &amp; Disassembles method in changing Phone housing</li> <li>v. Standard Repair Cellular Phone Testing &amp; Commissioning</li> <li>vi. Cellular Phone Manual &amp; SOP</li> <li>vii. Safety &amp; healthy Procedure</li> </ul>			10 hours	Lecture	<ul style="list-style-type: none"> <li>i. Faulty component identified</li> <li>ii. Component to be replaced are confirmed</li> <li>iii. Testing and Commissioning applied</li> <li>iv. Phone component are disassembled and assembled</li> <li>v. Assemble and disassembled method are followed</li> <li>vi. Hp component are change and replaced</li> </ul>
		<ul style="list-style-type: none"> <li>i. Identify faulty component</li> <li>ii. Confirm and replace the component.</li> <li>iii. Apply assemble &amp; Disassembles method in changing Phone component</li> <li>iv. Carry out standard Repair Cellular Phone</li> <li>v. Perform Testing &amp; Commissioning</li> <li>vi. Follow up Cellular Phone Manual &amp; SOP</li> </ul>			30 hours	Demonstration & Practical

		vii. Comply safety & healthy procedure				
			<u>Attitude :</u> i. Creative Thinking ii. Patience iii. Time management skill iv. Meticulous in details <u>Safety:</u> i. Ergonomic Posture Position ii. Hazard free work environment iii. Avoid using flammable product iv. Proper ventilation v. No smoking vi. Correct chemical handling vii. Use safety wear <ul style="list-style-type: none"> <li>▪ Mask</li> <li>▪ Glove</li> <li>▪ Google</li> <li>▪ Anti Static Mat</li> <li>▪ Anti Static</li> </ul>			



			wristband <i>viii.</i> Exhaust Fan			
3. Verify Cellular Phone Problem	<ul style="list-style-type: none"> <li>i. Cellular Phone Manual</li> <li>ii. Testing &amp; verification Procedure</li> <li>iii. Standard Operation Procedure</li> <li>iv. Schematic and diagrams</li> <li>v. Types and function of Cellular phone hardware</li> </ul>			10 hours	Lecture	<ul style="list-style-type: none"> <li>i. Cellular Phone hardware are tested</li> <li>ii. Test and verification procedure applied</li> <li>iii. Schematics and diagrams interpreted</li> </ul>
		<ul style="list-style-type: none"> <li>i. Test Hand Phone Hardware</li> <li>ii. Confirm Hand Phone fully functioning</li> <li>iii. Interpret Schematics and Diagrams</li> <li>iv. Apply test and verification procedures</li> <li>v. Interpret Schematics and diagrams</li> </ul>	<u>Attitude:</u> <ul style="list-style-type: none"> <li>i. Interpersonal skill</li> <li>ii. Teamwork</li> <li>iii. Self-discipline Learning skill</li> </ul> <u>Safety:</u> <ul style="list-style-type: none"> <li>i. Hazard free</li> <li>ii. Work environment</li> <li>iii. Avoid using flammable product</li> <li>iv. Proper ventilation</li> <li>v. No smoking</li> <li>vi. Correct chemical handling</li> <li>vii. Use safety wear</li> <li>viii. Anti-Static Mat</li> </ul>	30 hours	Demonstration & Practical	<ul style="list-style-type: none"> <li>iv. SOP followed</li> <li>v. Cellular Phone are functioned</li> <li>vi. Cellular Phone are function according to manual</li> </ul>

## Employability Skills

Core Abilities
01.10 Apply a variety of mathematical techniques
01.11 Apply thinking skills and creativity
02.10 Prepare reports and instructions
02.11 Convey information and ideas to people
03.09 Manage and improve performance of individuals
03.15 Liaise to achieve identified outcomes
03.16 Identify and assess client / customer needs
04.07 Negotiate acceptance and support for objectives and strategies
05.01 Implement project / work plans
05.02 Inspect and monitor work done and / or in progress

## Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Blower	1:1
2. Solder	1:1
3. Flux	1:1
4. Power Supply	1:5
5. Solder Iron	1:1
6. Solder Paste	1:1
7. Ultra Sonic Cleaner	1:30
8. Solder Wick	1:1
9. Tools Set (Tweezers, Blade, Spatula, BGA Plate, Tooth Pick, Housing Opener, Cutter)	1:1
10. Hand Phone Set (various model)	2:1
11. Contact Cleaner	1:30
12. PCB Cleaner	1:1
13. Brush	1:1
14. Microscope	1:10
	1:10

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1. Fundamental Electrical and Electronic Principles ; Taylor & Francis ; May 2012 - ISBN: 978-0-7506-8737-9
2. Schaum's Outlines Of Electronic Device And Circuits, Second Edition; McGraw-Hill;Feb 2012-10-14 - ISBN: 978-0-0713-9830-5
3. An Introduction To Electronic and Ionic Material; World Scientific ;Jan 1999.
4. Introduction To Communication Electronic Warfare Systems; artech House ; Feb 2002 - ISBN: 978-1-5805-3344-7
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6. Electronics ; B.Y Narayana Rao ; Kusum Anand ; Himalaya Publishing House - ISBN: 978-9-3504-3166-5
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## CURRICULUM of COMPETENCY UNIT (CoCU)

<b>Sub Sector</b>	TELECOMMUNICATION						
<b>Job Area</b>	ADVANCED CELLULAR PHONE REPAIR						
<b>Competency Unit Title</b>	ADVANCE CELLULAR PHONE SOFTWARE REPAIR						
<b>Learning Outcome</b>	<p>The person who is competent in this CU shall be able to service and repair cellular hand phone to excellent condition as per manuals.</p> <p>Upon completion of this competency unit trainees will be able to:-</p> <ol style="list-style-type: none"> <li>1. Troubleshoot Advanced Software Fault</li> <li>2. Flash advanced cellular phone software.</li> <li>3. Test and commission cellular phone.</li> </ol>						
<b>Competency Unit ID</b>	EE-039-3:2012-C02	<b>Level</b>	3	<b>Training Duration</b>	120 Hours	<b>Credit Hours</b>	12.0
<b>Work Activities</b>	<b>Related Knowledge</b>	<b>Applied Skills</b>	<b>Attitude / Safety / Environmental</b>	<b>Training Hours</b>	<b>Delivery Mode</b>	<b>Assessment Criteria</b>	
1. Troubleshoot Advanced Software Fault	<ol style="list-style-type: none"> <li>i. Flasher Software set up &amp; installation</li> <li>ii. Type of Phone model</li> <li>ii. Type of Software box</li> <li>v. Type and functions of software Cable &amp; Software box</li> <li>v. SOP</li> <li>vi. User Manuals</li> <li>ii. Installation process &amp; procedure</li> </ol>			10 hours	Lecture	<ol style="list-style-type: none"> <li>i. SOP and User Manuals interpreted</li> <li>ii. Flasher Software Installed</li> <li>iii. Phone Model determine</li> <li>iv. Software Box determine</li> <li>v. Software Cable</li> </ol>	

		<ul style="list-style-type: none"> <li>i. Interpret SOP and User Manuals</li> <li>ii. Install Flasher Software</li> <li>iii. Identify Phone Model</li> <li>iv. Identify Software Box</li> <li>v. Identify Software Cable</li> <li>vi. Apply troubleshooting process and procedure</li> <li>vii. Apply installation process and procedure</li> </ul>	<p><u>Attitude:</u></p> <ul style="list-style-type: none"> <li>i. Creative thinking</li> <li>ii. Self-discipline learning skill</li> </ul> <p><u>Safety:</u></p> <ul style="list-style-type: none"> <li>i. Avoid using damage cable</li> </ul>	30hours	Demonstration & Observation	<ul style="list-style-type: none"> <li>vi. Installation process and procedure applied</li> </ul>
2. Flash Advanced Cellular Phone Software.	<ul style="list-style-type: none"> <li>i. Type of cellular phone fault</li> <li>ii. Type of software cable</li> <li>iii. Type of flashing box</li> <li>iv. Flashing procedure</li> </ul>			10 hour	Lecture	<ul style="list-style-type: none"> <li>i. Cellular phone fault identified</li> <li>ii. Type of software cable identified</li> <li>iii. Identify type of flashing box</li> <li>iv. Follow Flashing</li> </ul>

		<ul style="list-style-type: none"> <li>i. Identify cellular phone fault</li> <li>ii. Identify type of software cable</li> <li>iii. Identify type of flashing box</li> <li>iv. Follow Flashing Procedure</li> </ul>	<p><u>Attitude:</u></p> <ul style="list-style-type: none"> <li>i. Creative thinking</li> <li>ii. Self-discipline</li> <li>iii. Learning skill</li> </ul> <p><u>Safety:</u></p> <ul style="list-style-type: none"> <li>i. Avoid using damage cable</li> </ul>	30 hour	Demonstration & Practical	Procedure
3. Test and commission cellular phone.	<ul style="list-style-type: none"> <li>i. Cellular phone navigation</li> <li>ii. Default cellular phone function</li> <li>iii. Test and commissioning procedures.</li> <li>iv. Manufacturer Manual and specifications.</li> <li>v. Testing checklist.</li> </ul>			10 hour	Lecture	<ul style="list-style-type: none"> <li>i. Cellular phone navigation performed</li> <li>ii. Cellular phone function is restore to manufacturer specification</li> <li>iii. Apply test and commissioning procedures.</li> <li>iv. Interpret manufacturer</li> </ul>

		<ul style="list-style-type: none"> <li>i. Perform cellular phone navigation</li> <li>ii. Identify default phone function according to manufacturer specifications</li> <li>iii. Apply test and commissioning procedures.</li> <li>iv. Interpret manufacturer Manual and specifications.</li> <li>v. Follow testing checklist.</li> </ul>	<u>Attitude:</u> <ul style="list-style-type: none"> <li>i. Self-discipline</li> <li>ii. Creative thinking</li> <li>iii. Learning skill</li> </ul> <u>Safety:</u> <ul style="list-style-type: none"> <li>i. No smoking</li> </ul>	30 hour	Demonstration & Practical	<ul style="list-style-type: none"> <li>v. Follow testing checklist.</li> </ul>
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### Employability Skills

<b>Core Abilities</b>
<ul style="list-style-type: none"> <li>01.07 Utilize database applications to locate and process information</li> <li>01.10 Apply a variety of mathematical techniques</li> <li>01.11 Apply thinking skills and creativity</li> <li>02.10 Prepare reports and instructions</li> <li>02.11 Convey information and ideas to people</li> <li>03.14 Facilitate and coordinate teams and ideas</li> <li>03.15 Liaise to achieve identified outcomes</li> <li>03.16 Identify and assess client / customer needs</li> <li>04.06 Allocate work</li> <li>05.01 Implement project / work plans</li> <li>05.02 Inspect and monitor work done and / or in progress</li> </ul>

**Tools, Equipment and Materials (TEM)**

ITEMS	RATIO (TEM : Trainees)
1. Flasher Boxes (various model)	1:1
2. Flashing Cables	1:1
3. Computer	1:1
4. Internet Connection	1:1
5. Tools Set	1:1
6. Hand Phone Set (various model)	2:1

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1. Fundamental Electrical and Electronic Principles ; Taylor & Francis ; May 2012 - ISBN: 978-0-7506-8737-9
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## CURRICULUM of COMPETENCY UNIT (CoCU)

<b>Sub Sector</b>	TELECOMMUNICATION						
<b>Job Area</b>	CELLULAR PHONE						
<b>Competency Unit Title</b>	SUPERVISORY FUNCTION						
<b>Learning Outcome</b>	<p>The person who is competent in this CU shall be able to supervise and monitor subordinates work function and company operations for smooth and excellent workshop operations and management.</p> <ol style="list-style-type: none"> <li>1. Prepare operation schedule</li> <li>2. Perform technician Job assessment</li> <li>3. Perform Quality Control On Repaired Cellular phone</li> <li>4. Provide Technical advice</li> <li>5. Implement safety and health procedure</li> </ol>						
<b>Competency Unit ID</b>	EE-039-3:2012-C03	<b>Level</b>	3	<b>Training Duration</b>	120 Hours	<b>Credit Hours</b>	12.0
<b>Work Activities</b>	<b>Related Knowledge</b>	<b>Applied Skills</b>	<b>Attitude / Safety / Environmental</b>	<b>Training Hours</b>	<b>Delivery Mode</b>	<b>Assessment Criteria</b>	
1. Prepare operation schedule	<ol style="list-style-type: none"> <li>i. Job scope and job description</li> <li>ii. Operation schedule</li> <li>iii. Daily work schedule</li> <li>iv. Job description.</li> <li>v. Gantt Chart</li> <li>vi. Work scheduling</li> <li>vii. Work activities</li> </ol>			6 hours	Lecture	<ol style="list-style-type: none"> <li>i. Job scope identified</li> <li>ii. Job description are prepared.</li> <li>ii. Work activities identified</li> <li>iii. Daily work schedule prepared</li> <li>iv. Gantt Chart and time line</li> </ol>	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		<ul style="list-style-type: none"> <li>i. Prepare job descriptions</li> <li>ii. Prepare time line / gantt chart</li> <li>iii. Prepare work scheduling</li> <li>iv. Assign repair job</li> <li>v. Confirm scheduling</li> </ul>		10 hours	Demonstration & Practical	<ul style="list-style-type: none"> <li>v. Work Scheduling prepared</li> </ul>
2. Perform technician job assessment	<ul style="list-style-type: none"> <li>i. Assessment job profile</li> <li>ii. Operation schedule</li> <li>iii. SOP on checking hp</li> <li>iv. Quality control procedure</li> <li>v. Job assessment process and procedures</li> </ul>			15 hour	Lecture	<ul style="list-style-type: none"> <li>i. Technician's job profile defined</li> <li>ii. Prepare operation schedule described.</li> <li>iii. SOP on checking repaired hand phones explained.</li> <li>iv. Quality control procedure followed.</li> <li>v. Quality control procedure applied.</li> </ul>
		<ul style="list-style-type: none"> <li>i. Prepare Job profile / specification</li> <li>ii. Analyse job profile</li> <li>iii. Prepare operation schedule</li> </ul>		17hours	Demonstration & Practical	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		<ul style="list-style-type: none"> <li>iv. Follow quality control procedures</li> <li>v. Follow SOP on checking handphones</li> </ul>				
3. Perform Quality Control On Repaired Cellular Phone	<ul style="list-style-type: none"> <li>i. QA work process</li> <li>ii. SOP on checking repaired hand phone job</li> <li>iii. Procedure on quality control</li> <li>iv. Technical updates</li> <li>v. Technical Manual</li> <li>vi. SOP</li> </ul>			7hours	Lecture	<ul style="list-style-type: none"> <li>i. Technical Manual interpreted</li> <li>ii. SOP interpreted .</li> <li>iii. Quality spare parts are identified</li> <li>iv. Hand phone are checked according to SOP</li> </ul>
		<ul style="list-style-type: none"> <li>i. Folow QA work process</li> <li>ii. Interpret SOP</li> <li>iii. Interpret technical manual</li> <li>iv. Check hand phone</li> <li>v. Apply quality control procedure</li> <li>vi. Apply new technical updates</li> </ul>		17hours	Demonstration & Practical	<ul style="list-style-type: none"> <li>i. Quality control process and procedure followed</li> <li>v. New technical updates applied.</li> <li>vi. Hand phones s functions as per manual</li> </ul>

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
4. Provide Technical advice	i. Technical issues ii. Technical manual iii. SOP iv. New technical Updates v. Creative sourcing vi. Technical sources			7hours	Lecture	i. Technical manual interpreted ii. Technical issues identified iii. Creative sourcing identified iv. New technical sources updated
	Vi Target groups & client	i. Identify technical issues ii. Interpret Technical manual iii. Interpret SOP iv. Advise on technical issues ii. Identify creative sourcing iii. Update technical sources		17hours	Demonstration & Practical	v. SOP interpreted vi. Technical issues advised based on client needs
5. Implement safety and health procedure	i. SOP on Safety & Health(OSHA) ii. Hazard free work environment ii. Types of safety signage, posters and banners iii. Safety and health procedure at workplace			7hours	Lecture	vi. SOP on Safety and health procedure are prepared according to OSHA vii. Hazard free work environment are created iii. Safety sign , posters and

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		<ul style="list-style-type: none"> <li>i. Prepare SOP on safety and health</li> <li>ii. Create hazard free work environment</li> <li>iii. Post safety signage and posters</li> <li>iii. Prepare safety and health process work flow and procedure</li> <li>iv. Monitor safety and health procedures implementation.</li> <li>v. Identify Incident and accident</li> <li>vi. Assess SHO implementation</li> </ul>	<p><u>Attitude:</u></p> <ul style="list-style-type: none"> <li>i. Meticulous in identifying handling fault</li> <li>ii. Creative in sourcing technical knowledge</li> <li>iii. Disciplined and punctual</li> <li>iv. Good in planning</li> <li>v. Good interpersonal skills</li> </ul> <p><u>Safety:</u></p> <ul style="list-style-type: none"> <li>i. Adhere to safety requirement</li> <li>ii. Ensure hazard free work environment</li> <li>iii. Using recommended tools and materials</li> </ul>	17hours	Demonstration & Practical	<ul style="list-style-type: none"> <li>banner are posted.</li> <li>iv. Safety and health procedures implementation monitored</li> <li>v. Incident and accident are assessed</li> <li>vi. SHO implementation assessed</li> </ul>

## Employability Skills

Core Abilities	Social Skills
01.07 Utilize database applications to locate and process information 01.10 Apply a variety of mathematical techniques 01.11 Apply thinking skills and creativity 02.10 Prepare reports and instructions 02.11 Convey information and ideas to people 03.14 Facilitate and coordinate teams and ideas 03.15 Liaise to achieve identified outcomes 03.16 Identify and assess client / customer needs 04.06 Allocate work 05.01 Implement project / work plans 05.02 Inspect and monitor work done and / or in progress	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

## Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Flasher Boxes (various model) 2. Flashing Cables 3. Computer 4. Internet Connection 5. Tools Set 6. Hand Phone Set (various model)	1:1 1:1 1:1 1:1 1:1 2:1

## REFERENCES

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## CURRICULUM of COMPETENCY UNIT (CoCU)

<b>Sub Sector</b>	<b>TELECOMMUNICATION</b>						
<b>Job Area</b>	<b>CELLULAR PHONE REPAIR</b>						
<b>Competency Unit Title</b>	<b>CELLULAR PHONE RESEARCH AND DEVELOPMENT</b>						
<b>Learning Outcome</b>	<p>The person who is competent in this CU shall be able to identify the latest and updated technologies in cellular phones. Upon completion of this competency unit trainees will be able to:-</p> <ul style="list-style-type: none"> <li>• Developed Software application</li> <li>• Perform hardware modification</li> </ul>						
<b>Competency Unit ID</b>	EE-039-3:2012-E01	<b>Level</b>	3	<b>Training Duration</b>	120 Hours	<b>Credit Hours</b>	12.0

<b>Work Activities</b>	<b>Related Knowledge</b>	<b>Applied Skills</b>	<b>Attitude / Safety / Environmental</b>	<b>Training Hours</b>	<b>Delivery Mode</b>	<b>Assessment Criteria</b>
1. Develop Software Application	i. Basic Computer ii. PC Communication setting up procedures iii. Type of phone firmware iv. Software tools v. Application programming tools vi. Application Test gear vii. Types of application (apps/games) viii. New / developed applications ix. Correct platform for application x. Types of Phone models			20hours	Lecture	i. Phone firmware to develop applications is identified ii. Correct platform for application is verified iii. Type of applications is verified (apps/games) iv. Developed application is used

		<ul style="list-style-type: none"> <li>i. Apply basic computer</li> <li>ii. Set up PC communication</li> <li>iii. Differentiate phone model</li> <li>iv. Verify correct platform for application</li> <li>v. Verify types of application</li> <li>vi. Comply software tools</li> <li>vii. Create new applications</li> <li>viii. Used developed applications</li> </ul>	<p><u>Attitude</u></p> <ul style="list-style-type: none"> <li>i. Meticulous in research and development hand phone software.</li> </ul> <p><u>Safety</u></p> <ul style="list-style-type: none"> <li>i. Adhere to hand phone.</li> </ul>	40 hours	Observation & Practical	<ul style="list-style-type: none"> <li>v. New applications is created</li> <li>vi. Applications test gear is applied according to Specification</li> </ul>
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Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Perform hardware modification	<ul style="list-style-type: none"> <li>i. Equipment and tools</li> <li>ii. Hand phone schematic</li> <li>iii. Hand phone Component function</li> <li>iv. Process and procedure of modification</li> <li>v. Types of tools and equipment for modification</li> <li>vi. Schematic diagram</li> <li>vii. Types and function of modified component</li> <li>viii. Types and usage of tools and equipment</li> </ul>			20hours	Lecture	<ul style="list-style-type: none"> <li>i. Equipment and tools needed to make hardware modification identified</li> <li>ii. Schematic interpreted</li> <li>iii. Hardware modified using schematic</li> <li>iv. Component function identified</li> <li>v. Process and procedure of modifications followed</li> <li>vi. Faulty phone resolved</li> <li>vii. Modified component used</li> <li>viii. Fault phone replaced</li> </ul>

		<ul style="list-style-type: none"> <li>i. Identify equipment and tools needed to make hardware modification</li> <li>ii. Interpret schematic</li> <li>iii. Modify hardware using schematic</li> <li>iv. Identify component function</li> <li>v. Follow process and procedure of modifications</li> <li>vi. Resolve faulty phone</li> <li>vii. Use modified component</li> <li>ix. Replace phone fault</li> </ul>	<p><u>Safety:</u></p> <ul style="list-style-type: none"> <li>i. Ergonomic Posture Position</li> <li>ii. Hazard free work environment</li> <li>iii. Avoid using flammable product</li> <li>iv. Proper ventilation <ul style="list-style-type: none"> <li>▪ Exhaust Fan</li> </ul> </li> <li>v. No smoking</li> <li>vi. Correct chemical handling</li> <li>vii. Use PPE.</li> </ul>	40 hours		
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### Employability Skills

Core Abilities	Social Skills
03.01 Apply cultural requirements to the workplace 03.02 Demonstrate integrity and apply ethical practices 03.03 Accept responsibility for own work and work area 03.04 Seek and act constructively upon feedback about performance 03.05 Demonstrate safety skills 03.06 Respond appropriately to people and situations 03.07 Resolve interpersonal conflicts	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

### Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Flasher Boxes (various model) 2. Flashing Cables 3. Computer 4. Internet Connection 5. Tools Set 6. Hand Phone Set (various model)	1:1 1:1 1:1 1:1 1:1 1:1

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## CURRICULUM of COMPETENCY UNIT (CoCU)

<b>Sub Sector</b>	<b>TELECOMMUNICATION</b>						
<b>Job Area</b>	<b>CELLULAR PHONE REPAIR</b>						
<b>Competency Unit Title</b>	<b>ENTERPRENEURSHIP ACTIVITIES</b>						
<b>Learning Outcome</b>	<p>The person who is competent in this CU shall be able to acquire entrepreneurship skill in managing hand phone business covering operations, management and business goals.                  Upon completion of this competency unit trainees will be able to:-</p> <ul style="list-style-type: none"> <li>• Manage hp business</li> <li>• Manage business accounts</li> <li>• Perform business marketing strategies</li> <li>• Manage human resources</li> </ul>						
<b>Competency Unit ID</b>	EE-039-3:2012-E02	<b>Level</b>	3	<b>Training Duration</b>	240 Hours	<b>Credit Hours</b>	24.0

<b>Work Activities</b>	<b>Related Knowledge</b>	<b>Applied Skills</b>	<b>Attitude / Safety / Environmental</b>	<b>Training Hours</b>	<b>Delivery Mode</b>	<b>Assessment Criteria</b>
1. Manage hp bussiness	i. Business strategies ii. Company vision, mission, and goals management iii. Organisation Management Skills ii. Public relations iii. Business networking iv. Global market business requirement and demand			20 hours	Lecture	i. Business strategies identified ii. Company vision, mission and goals identified iii. Organisation management skills applied v. Public relations skills demonstrated vi. Bussiness networking identified

						<ul style="list-style-type: none"> <li>vii. Market demand identified</li> <li>viii. Business marketing strategies identified</li> <li>ix. Global market requirements and demand identified</li> </ul>
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Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		<ul style="list-style-type: none"> <li>i. Identify business strategies</li> <li>ii. Identify Company vision, mission and goals</li> <li>iii. Apply organisation management skills</li> <li>iv. Demonstrate public relations skills</li> <li>v. Identify bussiness networking,</li> <li>vi. Identify market demand</li> <li><b>vii.</b> Identify business marketing strategies</li> <li><b>viii.</b> Identify global market requirements</li> </ul>	<p><u>Attitude:</u></p> <ul style="list-style-type: none"> <li>i. Communication skill</li> <li>ii. Interpersonal skill</li> <li>ii. Teamwork</li> <li>v. Self-discipline</li> <li>v. Learning skill</li> </ul>	40 hours	Observation & Practical	



2. Manage Bussiness Accounts	<ul style="list-style-type: none"> <li>i. Accounting concept</li> <li>ii. Bussiness accounting</li> <li>iii. Cash flow management</li> <li>iv. Account audit</li> <li>v. Profit and Loss</li> <li>vi. Final accounts</li> </ul>			20 hours	Lecture	<ul style="list-style-type: none"> <li>i. Accounting concept applied</li> <li>ii. Bussiness accounting applied</li> <li>iii. Cash flow prepared</li> <li>iv. Cash Flow managed</li> <li>v. Account for audit prepared</li> <li>vi. Profit and Loss identified</li> <li>vii. Final accounts prepared</li> <li>vi. Cash flow management applied</li> </ul>
		<ul style="list-style-type: none"> <li>i. Apply accounting concept</li> <li>ii. Apply bussiness accounting</li> <li>iii. Prepare cash flow</li> <li>iv. Manage cash flow</li> <li>v. Prepare account for auditing</li> <li>vi. Identify Profit and Loss</li> <li>vii. Prepare final accounts</li> </ul>	<p><u>Attitude:</u></p> <ul style="list-style-type: none"> <li>i. Communication skill</li> <li>ii. Interpersonal skill</li> <li>ii. Teamwork</li> <li>v. Self-discipline</li> <li>v. Learning skill</li> </ul>	40 hours	Observation & Practical	

<p>3. Perform business marketing strategy</p>	<ul style="list-style-type: none"> <li>iii. Marketing concept</li> <li>ix. Types of business &amp; survey</li> <li>viii. Types of Marketing strategy</li> <li>ix. Product knowledge</li> <li>x. Supply and demand</li> <li>xi. Bussiness modus operandi</li> <li>xii. Bussiness networking &amp; links</li> <li>xiii. Client target group</li> <li>xiv. Final accounts</li> </ul>			<p>20 hours</p>	<p>Lecture</p>	<ul style="list-style-type: none"> <li>i. Marketing concept desribed</li> <li>ii. Types of business identified</li> <li>iii. Bussiness survey performed</li> <li>iv. Types of Marketing strategy identified</li> <li>v. Product knowledge enhanced</li> <li>vi. Supply and demand identified</li> <li>vii. Bussiness modus operandi identified</li> <li>iii. Bussiness networking &amp; links identified</li> <li>xv. Client target group identified</li> <li>xvi. Business operations, profit and loss evaluated</li> </ul>
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		<ul style="list-style-type: none"> <li>i. Identify Marketing concept</li> <li>ii. Identify types of business</li> <li>iii. Perform business survey</li> <li>iv. Identify types of marketing strategy</li> <li>v. Enhance product knowledge</li> <li>vi. Identify supply and demand</li> <li>vii. Identify bussiness modus operandi</li> <li>iii. Identify bussiness networking &amp; links</li> <li>vii. Identify lient target group</li> <li>viii. Evaluate business operations, profit and loss</li> </ul>	<p><u>Attitude:</u></p> <ul style="list-style-type: none"> <li>i. Communication skill</li> <li>ii. Interpersonal skill</li> <li>ii. Teamwork</li> <li>v. Self-discipline</li> <li>v. Learning skill</li> </ul>	40 hours	Observation & Practical	
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<p>4. Manage human resources</p>	<ul style="list-style-type: none"> <li>i. Organisation chart, function &amp; scope of work</li> <li>ii. Staff recruitment &amp; orientation</li> <li>iii. Staff development</li> <li>vi. Staff Work scheduling</li> <li>vii. Staff discipline</li> <li>viii. Staff welfare</li> <li>ix. Staff appraisals</li> <li>x. Staff Counseling</li> </ul>			<p>20 hours</p>	<p>Lecture</p>	<ul style="list-style-type: none"> <li>i. Organisation chart, function &amp; scope of work are prepared</li> <li>ii. Staff recruitment &amp; orientation are explained</li> <li>iii. Staff Development handle</li> <li>iv. Staff work Scheduling prepared</li> <li>v. Staff discipline handled</li> <li>vi. Staff Welfare handled</li> <li>vii. Staff appraisals described</li> <li>viii. staff counselling performed</li> </ul>
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		<ul style="list-style-type: none"> <li>ii. Prepare organisation chart, function &amp; scope of work</li> <li>i. Handle staff recruitment &amp; orientation</li> <li>ii. Handle development</li> <li>iii. Prepare work scheduling</li> <li>iv. Handle staff discipline</li> <li>v. Handle staff welfare</li> <li>vi. Perform staff appraisals</li> <li>vii. Perform staff counseling</li> </ul>	<p><u>Attitude:</u></p> <ul style="list-style-type: none"> <li>i. Communication skill</li> <li>iii. Interpersonal skill</li> <li>iv. Teamwork</li> <li>v. Self-discipline</li> <li>vi. Learning skill</li> </ul>	40 hours	Observation & Practical	
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### Employability Skills

Core Abilities	Social Skills
<ul style="list-style-type: none"> <li>03.01 Apply cultural requirements to the workplace</li> <li>03.02 Demonstrate integrity and apply ethical practices</li> <li>03.03 Accept responsibility for own work and work area</li> <li>03.04 Seek and act constructively upon feedback about performance</li> <li>03.05 Demonstrate safety skills</li> <li>03.06 Respond appropriately to people and situations</li> <li>03.07 Resolve interpersonal conflicts</li> </ul>	<ul style="list-style-type: none"> <li>1. Communication skills</li> <li>2. Conceptual skills</li> <li>3. Interpersonal skills</li> <li>4. Multitasking and prioritizing</li> <li>5. Self-discipline</li> <li>6. Teamwork</li> </ul>

**Tools, Equipment and Materials (TEM)**

ITEMS	RATIO (TEM : Trainees)
1. Blower	
2. Solder	1:1
3. Flux	1:1
4. Power Supply	1:1
5. Solder Iron	1:1
6. Solder Paste	1:1
7. Ultra Sonic Cleaner	1:1
8. Solder Wick	1:1
9. Tools Set (Tweezers, Blade, Spatula, BGA Plate, Tooth	1:1
Pick, Housing Opener, Cutter)	1:5
10. Hand Phone Set (various model)	1:5
11. Contact Cleaner	1:30
12. PCB Cleaner	1:30
13. Brush	1:1
14. Microscope	1:1
15. Flasher Boxes (various model)	1:10
16. Flashing Cables	1:5
17. Computer	1:5
18. Internet Connection	1:1
19. Tools Set	1:1
20. Hand Phone Set (various model)	1:1
	1:1

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CU ID	COMPETENCY UNIT TITLE	WORKS ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	HOURS
			(A)	(B)	(A+B)
CU 1	ADVANCED CELLULAR PHONE HARDWARE REPAIR	Troubleshoot Advanced Hardware Fault	10	30	40
		Replace faulty cellular phone Component	10	30	40
		Verify cellular phone problem	10	30	40
CU 2	ADVANCED CELLULAR PHONE SOFTWARE REPAIR	Troubleshoot advance software Fault	10	30	40
		Flash advanced cellular phone software .	10	30	40
		Test and commission cellular phone.	10	30	40
CU 3	SUPERVISORY FUNCTION	Prepare operation schedule	10	10	20
		Perform technician job assessment	10	17	27
		Perform quality control on repaired Cellular Phone	10	17	27
		Provide Technical advice	10	17	27
		Implement safety and health procedure	10	17	27
CU 4	CELLULAR PHONE RESEARCH AND DEVELOPMENT (ELECTIVE)	Develop software application	20	40	60
		Perform hardware modification	20	40	60
CU 5	ENTERPRENEURSHIP ACTIVITIES (ELECTIVE)	Manage hp business	20	40	60
		Manage business accounts	20	40	60
		Perform Bussiness Marketing Strategies	20	40	60
		Manage organisation human resource	20	40	60
<b>TOTAL HOURS</b>			<b>130</b>	<b>258</b>	<b>388</b>