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GOVERNMENT OF THE PUNJAB
TECHNICAL EDUCATION & VOCATIONAL
TRAINING AUTHORITY



CURRICULUM FOR
MOBILE PHONE REPAIR

(6 – MONTHS COURSE)
Revised April 2016



CURRICULUM SECTION
ACADEMICS DEPARTMENT
96-H, GULBERG-II, LAHORE
Ph # 042-99263055-9, 99263064
gm.acad@tevta.gop.pk, manager.cur@tevta.gop.pk

TRAINING OBJECTIVES

This is an age of communication and the older methods of communication are becoming obsolete and newer & modern ones are continuously replacing them. One of such a modern communiqué is mobile communication. It has now become a necessity & has been enthusiastically adopted by the people throughout the world. The modern mass cannot think of life without this facility to connect with their family and friends at any time from any venue.

As a sequel of it being a necessity, it is absorbing more people into it than any other field of life these days. Now keeping in mind this fact, it is felt imperative to introduce some courses about mobiles.

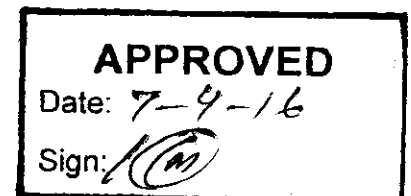
Repairing of mobiles is one of such course, to produce skilled manpower, who will be able to carry out repair of the mobiles to enhance their life & to make them more useful.

This curriculum is developed by more focusing on practical along with necessarily required theoretical knowledge as per need of the hours.

This curriculum of six months duration covers the main topics of usage of electronics devices, common hand tools, computer applications, basic network overview, measuring instruments, usage of communication systems, faultfinding of mobile phones & their rectification, troubleshooting of software problems and upgrading of software version of handset independently to meet the need of job market along with Functional English and Information Technology.

CURRICULUM SALIENTS

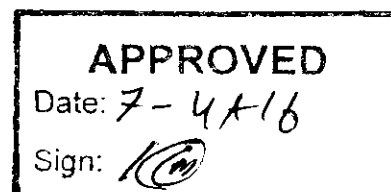
| | |
|-----------------------|--------------------------------|
| Name of the course | Mobile Phone Repairing |
| Entry Level | Matric Preferably with Science |
| Duration of Course | 6 – Months |
| Total Training Hours | 800 Contact Hours |
| Training Methodology | Practical 85% Theory 15% |
| Medium of Instruction | Urdu / English |



KNOWLEDGE PROFICIENCY DETAILS

On successful completion of the course, the trainee should be able to: -

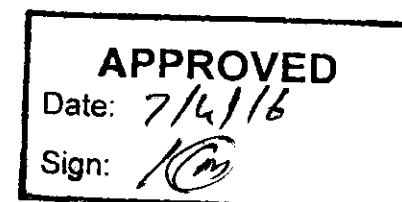
1. Explain the safety precautions & practices in handling of electronic devices.
2. Explain the measuring instruments & transformers & electronic devices.
3. Define the atomic structures, conductors, insulators, capacitors & inductors.
4. Define the resistances, currents & voltages & laws defining their relationship.
5. Explain the battery, different types and their advantages.
6. Explain the electricity and how it interacts with magnetism.
7. Describe the communication and configuration systems.
8. Describe the basic information about computer applications relation to mobile repair.
9. Explain the basic concepts of wireless communication systems
10. Explain the wireless standards
11. Define the multiple access & GSM.
12. Define the basic networks concepts like traffic / signaling, SM card function & GSM channel type's etc.
13. Explain the techniques for repairing of the mobiles
14. Explain the techniques of troubleshooting of hardware & software.
15. Explain the IMEI, unlock, sp lock, etc.



SKILL PROFICIENCY DETAILS

On successful completion of this course, the trainee should be able to:-


1. Work according to general workshop safety rules.
2. Use the measuring instruments safely.
3. Operate the series & parallel circuit, capacitors, inductors etc.
4. Use the Transformers & batteries
5. Operate the different electronic devices like semiconductor devices, diode & their applications & bipolar transistor etc.
6. Use the different communication systems like radio transmitter, radio receiver & wireless communication etc.
7. Operate the computers properly.
8. Operate the different instruments like microscope hot air gun & soldering station etc.
9. Handle the network traffic signaling and Tele services.
10. Find the faults in mobiles & to repair them.
11. Read the block diagrams of mobile sets.
12. Troubleshoot of different mobile sets.
13. Troubleshoot of software problems.
14. Repair the IMEI.
15. Unlock the sp lock
16. Upgrade software version of handset.



Mobile Phone Repairing Course (6-Month Course)

SCHEME OF STUDIES
Mobile Phone Repairing
(6 - Months Course)

| S. No. | Main Topics | Theory Hours | Practical Hours | Total Hours |
|--------------|--|--------------|-----------------|-------------|
| 1. | Electronics | 32 | 178 | 210 |
| 2. | Fundamental of Communication System | 8 | 50 | 58 |
| 3. | Fundamentals of Cell Telephony | 13 | 80 | 93 |
| 4. | Cell Measuring Instruments | 5 | 66 | 71 |
| 5. | Basic Network Overview | 7 | 40 | 47 |
| 6. | Configuring of Cell Phone | - | 36 | 36 |
| 7. | Repair Methodology, Techniques and Troubleshooting | 15 | 150 | 165 |
| 8. | I.T Fundamentals | 8 | 32 | 40 |
| 9. | Functional English | 16 | 64 | 80 |
| Total | | 104 | 696 | 800 |

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DETAIL OF COURSE CONTENTS
Mobile Phone Repairing
(6 – Months Course)

| Sr. No. | Detail of Topics | Theory Hours | Practical Hours |
|---|---|--------------|-----------------|
| 1. | 1. Electronics | | |
| | 1.1. Introduction | | |
| | 1.1.1. Safety rules & quality of electrical and electronics | 0.5 | 2 |
| | 1.1.2. Introduction & Application of Electricity & electronics | 0.5 | 2 |
| | 1.1.3. Symbols for Electronics Components | 0.5 | 3 |
| | 1.2. Measuring Instruments | | |
| | 1.2.1. Introduction Safety for measuring tools and equipments. | 0.5 | 3 |
| | 1.2.2. Function Generators, Pattern generator, Signal Generator AF/RF | 0.5 | 3 |
| | 1.2.3. Multi-meter.(Analogue) & Multi-meter.(Digital) | 0.5 | 3 |
| | 1.2.4. Oscilloscope | 0.5 | 3 |
| | 1.3. Atom Conductor & Insulator | | |
| | 1.3.1. Atomic structure Charge of proton, neutron, electrons Similar, dissimilar charges & Flow of electrons (current) | 0.5 | 3 |
| | 1.3.2. Generation of EMF (voltage) Definition of Conductivity, Definition of Conductor & Insulator Types of conductor & insulator | 0.5 | 3 |
| | 1.4. Resistance | | |
| | 1.4.1. Definition of resistance, Resistance dependent material and unit | 0.5 | 3 |
| | 1.4.2. Color coding and de-coding of resistance (basic & advance) & Types of resistance | 0.5 | 3 |
| | 1.5. Ohm's Law | | |
| | 1.5.1. Ohm's law (relation between I & V when R is constant) | 0.5 | 3 |
| | 1.5.2. Ohms law relation between I & V when R is variable) | 0.5 | 3 |
| | 1.5.3. Electrical Power | 0.5 | 3 |
| | 1.6. Series and Parallel Circuits | | |
| 1.6.1. Resistors in series and Parallel circuit | 0.5 | 3 | |
| 1.6.2. Current in series and Parallel circuit | 0.5 | 3 | |
| 1.7. Capacitors | | | |
| 1.7.1. The capacitors & Types of capacitors | 0.5 | 3 | |


Mobile Phone Repairing Course (6-Month Course)

| | | |
|---|-----|---|
| 1.7.2. Capacitors in D.C.& AC circuits | 0.5 | 3 |
| 1.8. Inductors | | |
| 1.8.1. The inductors ,Types of inductors & Inductors in Series & Parallel | 0.5 | 3 |
| 1.8.2. Inductors in AC & DC circuits | 0.5 | 3 |
| 1.9. Electricity & Magnetism | | |
| 1.9.1. The magnetic field | 0.5 | 3 |
| 1.9.2. Electromagnetism & Electromagnetic induction | 0.5 | 3 |
| 1.10. Transformers | | |
| 1.10.1. The basic principals of Transformers | 0.5 | 3 |
| 1.10.2. Types of Transformers | 0.5 | 3 |
| 1.11. RLC in series and parallel circuit | | |
| 1.11.1. Sinusoidal response of RC / RL circuits | 0.5 | 3 |
| 1.11.2. Impedance of series & parallel RC / RL circuits | 0.5 | 3 |
| 1.11.3. Basic applications of RLC circuits | 0.5 | 3 |
| 1.12. Semiconductor Devices | | |
| 1.12.1. Conduction in semiconductor materials | 0.5 | 3 |
| 1.12.2. N type & P type semiconductors PN junction | 0.5 | 3 |
| 1.12.3. Biasing the diode, Diode characteristics | 0.5 | 3 |
| 1.13. Diodes & Their Applications | | |
| 1.13.1. Half-wave rectifier , Full-Wave rectifier & Rectifier filters | 0.5 | 3 |
| 1.13.2. Zener diode, LED & Varactor Diode | 0.5 | 3 |
| 1.14. Bipolar Transistor | | |
| 1.14.1. Basic principle & Transistor biasing | 1 | 3 |
| 1.14.2. Current, voltage Gain | 1 | 3 |
| 1.14.3. Transistor as Amplifier & as Switch | 0.5 | 3 |
| 1.15. Field Effect Transistors | | |
| 1.15.1. Construction of JFET | 0.5 | 3 |
| 1.15.2. N channel , p channel & Types of FET | 0.5 | 3 |
| 1.15.3. MOS FET | 0.5 | 3 |
| 1.16. Uni Junction Transistor | | |
| 1.16.1. Construction of UJT | 0.5 | 3 |
| 1.16.2. UJT as a Relaxation Oscillator | 0.5 | 3 |
| 1.17. Silicon Controlled Rectifier | | |
| 1.17.1. Construction of SCR | 0.5 | 3 |
| 1.17.2. Application of SCR | 0.5 | 3 |
| 1.18. Integrated circuits | | |
| 1.18.1. Construction of I.C | 0.5 | 3 |
| 1.18.2. Types of ICs | 0.5 | 3 |

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| | | |
|---|-----------|------------|
| | 0.5 | 3 |
| 1.18.3. Level of Integration | | |
| 1.19. Operational Amplifier | | |
| 1.19.1. The differential Amplifier | 1 | 3 |
| 1.19.2. Operational amp as Inverting & Non-Inverting Amplifier | 0.5 | 3 |
| 1.19.3. Applications of op Amplifier | 0.5 | 3 |
| 1.20. Electronic Timer | | |
| 1.20.1. Construction of timer 555 | 0.5 | 3 |
| 1.20.2. Applications | 0.5 | 3 |
| 1.21. Regulated power supply | | |
| 1.21.1. Transistorized regulated power supply(fixed) & (adjustable) | 0.5 | 6 |
| 1.21.2. Integrated Regulators | 0.5 | 6 |
| 1.22. Electronics of Mobile Phone | | |
| 1.22.1. Charger | 0.5 | 6 |
| 1.22.2. Other Parts | 0.5 | 3 |
| 1.23. Digital Electronics | | |
| 1.23.1. Introduction | 0.5 | |
| 1.23.2. Basic functions of logic operation | 1 | 3 |
| 1.23.3. AND, OR, & NOT operation | 1 | 3 |
| 1.23.4. NAND, NOR & Exclusive OR Operation | 1 | 3 |
| <i>Total hours</i> | 32 | 178 |
| 2. Fundamental of Communication System | | |
| 2.1. Radio Transmitter | | |
| 2.1.1. Block Diagram of radio transmitter 1(AM/FM) | 0.5 | 3 |
| 2.1.2. Signal Transmission | 0.5 | 3 |
| 2.2. Radio Receiver | | |
| 2.2.1. Block diagram of S.H. Radio Receiver(AM) | 0.5 | 3 |
| 2.2.2. Principle of Heterodyning Action | 0.5 | 3 |
| 2.3. Modulation | | |
| 2.3.1. Introduction | 0.5 | |
| 2.3.2. Fundamental of AM Modulator | 0.5 | 3 |
| 2.3.3. Fundamental of FM Modulation | | 3 |
| 2.3.4. FM VS AM | | 3 |
| 2.3.5. AM & FM Demodulator | 0.5 | 3 |
| 2.3.6. Sampling | 0.5 | 3 |
| 2.3.7. PCM | 0.5 | 3 |

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| | | | |
|----|--|-----|----|
| | 2.4. Introduction to Wireless Communication System | | |
| | 2.4.1. Abbreviations of Communication Systems | 0.5 | 2 |
| | 2.4.2. Mobil Radio system Around the world | 0.5 | 3 |
| | 2.4.3. Examples of wireless Communication System | 0.5 | 3 |
| | 2.4.4. Paging | 0.5 | 3 |
| | 2.4.5. Cordless Telephone system | 0.5 | 3 |
| | 2.4.6. Cellular Telephone System | 0.5 | 3 |
| | 2.4.7. Comparison of Common Wireless Communication Systems | 0.5 | 3 |
| | | 8 | 50 |
| | 3. Fundamentals of Cell Telephony | | |
| | 3.1. Introduction to Wireless Communication System | | |
| | 3.1.1. Abbreviations of Communication Systems | 0.5 | 2 |
| | 3.1.2. Mobil Radio system Around the world | | 3 |
| | 3.1.3. Examples of wireless Communication System | 0.5 | 3 |
| | 3.1.4. Paging | 0.5 | 3 |
| | 3.1.5. Cordless Telephone system | 0.5 | 3 |
| | 3.1.6. Cellular Telephone System | 0.5 | 3 |
| | 3.1.7. Comparison of Common Wireless Communication Systems | 0.5 | 3 |
| 4. | 3.1.8. Problems | 0.5 | 3 |
| | 3.2. Wireless System and Standards | | |
| | 3.2.1. Duplexing Techniques | 0.5 | 3 |
| | 3.2.2. Introduction to Duplexing Technique | 0.5 | 3 |
| | 3.2.3. Frequency Division Duplexing (FDD) | 0.5 | 3 |
| | 3.2.4. Time Division Duplexing (TDD) | 0.5 | 3 |
| | 3.3. Multiple Access | | |
| | 3.3.1. Introduction to Multiple Access | 0.5 | 3 |
| | 3.3.2. Frequency Division Multiple Access (FDMA) | 0.5 | 3 |
| | 3.3.3. Time Division Multiple Access (TDMA) | 0.5 | 3 |
| | 3.3.4. Code Division Multiple Access (CDMA) | 0.5 | 3 |
| | 3.3.5. Access Communication System C Amps / (ETACS) | 0.5 | 3 |
| | Overview | | |

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|--|--|-----|----|
| | 5.9. Supplementary Services | 0.5 | 3 |
| | 5.10. Intelligent Net work Services | 0.5 | 3 |
| | 5.11. Cellular Principles | 0.5 | 3 |
| | 5.12. GSM Radio Subsystem | 0.5 | 3 |
| | 5.13. GSM Channel Types | 0.5 | 3 |
| | 5.14. Functions and Protocols | 0.5 | 3 |
| | Total hours | 7 | 40 |
| 6. | 6. Configuration of Mobile Phone | | |
| | 6.1. Setting | - | 5 |
| | 6.2. Profile | - | 3 |
| | 6.3. Messing | - | 3 |
| | 6.4. Media | - | 3 |
| | 6.5. Tools | - | 3 |
| | 6.6. Task | - | 3 |
| | 6.7. Organizer | - | 4 |
| | 6.8. Internet | - | 6 |
| | 6.9. WAP / GPRS | - | 6 |
| | Total hours | | 36 |
| 7. | 7. Repair Methodology Techniques and Troubleshooting. | | |
| | 7.1. Repair Methodology / Techniques. | | |
| | 7.1.1 Instruction to repair system for mobile phones hand set. | 0.5 | 3 |
| | 7.1.2 General Block diagram of mobile phones. | 0.5 | 3 |
| | 7.1.3 Inspection procedure | 0.5 | 3 |
| | 7.1.4 Fault diagnoses procedure | 0.5 | 3 |
| | 7.1.5 Trouble Shooting procedure | 0.5 | 3 |
| | 7.1.6 Block diagram of mobile phones Nokia series | 0.5 | 3 |
| | 7.1.7 Block diagram of mobile phones Sony – Ericsson series | 0.5 | 6 |
| | 7.1.8 Block diagram of mobile phones Siemens series | 0.5 | 6 |
| | 7.1.9 Block diagram of mobile phones Motorola series | 0.5 | 6 |
| | 7.1.10 Block diagram of mobile phones Samsung series | 0.5 | 6 |
| 7.1.11 Block diagram of mobile phones Panasonic series | 0.5 | 6 | |

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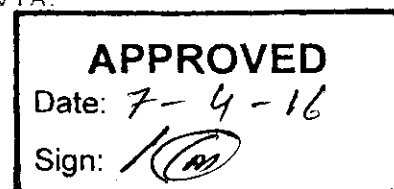
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| | | |
|---|-----------|------------|
| 7.2. Troubleshooting. | | |
| Troubleshooting of Software Problems. | | |
| 7.2.1 Introduction of Software Problems. | 0.5 | 6 |
| 7.2.2 Introduction of requirements (Basic | 0.5 | 6 |
| 7.2.3 How to identify the software problem of different models of handsets. | 0.5 | 6 |
| 7.2.4 What is the cause of this problem | 0.5 | 3 |
| 7.2.5 What is the effect of this problem | 0.5 | 3 |
| 7.2.6 Cleaning Brush (Skills and Techniques) | | 6 |
| 7.2.7 Repairing Steps. | 0.5 | 6 |
| 7.2.8 Repairing Tips | 0.5 | 6 |
| 7.2.9 Demonstration | | 6 |
| 7.2.10 How to use the appropriate equipment and software for troubleshooting. | 0.5 | 6 |
| 7.3. Up gradation of Software Version of Handsets. | | |
| 7.3.1 Introduction of the requirements (Basic | 0.5 | 6 |
| 7.3.2 What is IMEI | 0.5 | |
| 7.3.3 What is Phone Lock | 0.5 | 6 |
| 7.3.4 What is SIM Lock | 0.5 | 6 |
| 7.3.5 What is the requirements to do handset | 0.5 | 6 |
| 7.3.6 Tools and equipment | 0.5 | |
| 7.3.7 Introduction of the related equipment and software to do the job | 0.5 | 6 |
| 7.3.8 Skills and techniques | 0.5 | 6 |
| 7.3.9 Repairing Steps | 0.5 | |
| 7.3.10 Repairing Tips | 0.5 | 6 |
| 7.3.11 Demonstration | 0.5 | 6 |
| | 15 | 150 |
| Total | 80 | 600 |

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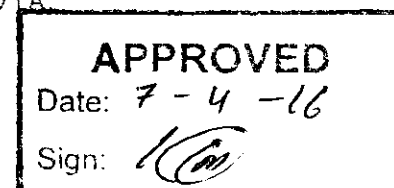
LIST OF PRACTICALS

- Interpreting schematic drawing of simple electrical circuit.
- Practice of loose wiring on the following circuit.
- Identify inductor, capacitor, transformers, vacuum tubes, transistors and their symbols. Drawing of simple circuits using the symbols.
- Introduction of ammeter, voltmeter, wattmeter and multi-meter
- Measurement of current using ammeter
- Measurement of voltage using voltmeter
- Measurement of current, voltage and resistance using multi-meter
- Verification of Ohm's law.
 - I. Keeping the voltage constant.
 - II. Keeping the resistance constant.
- Verification of the laws of series and parallel combination of resistance by
 - I. Ohmmeter method.
 - II. Voltmeter – ammeter method.
- Verify kirchoff's laws.
- Measurement of power.
 - I. Voltmeter / Ammeter method.
 - II. Wattmeter.
- Practice of resistor color-coding.
- Identification of various types of capacitors and their color-coding.
- Determine the capacitance by using digital LCR meter
- Verify laws of combination of capacitor.
- Observe capacitor charging and discharging.
- Determine the inductance of a choke coil using LCR meter
- Familiarization with various type of transformers used in electric field
- Determine voltage and current ratio of a transformer
- Identification of diodes, transistors (BJT & FET) and their electrodes.
- Identification of various diodes, transistors and ICs (number system and terminals).
- Checking of junction diode and constructing a bridge rectifier.



Mobile Phone Repairing Course (6-Month Course)

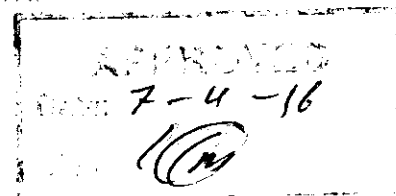
- Study number system of diode and transistor using data books.
- Assembling a full wave diode rectifier with a filter.
- Demonstrate diode as a switch with LED as a load.
- Troubleshoot a faulty diode rectifier circuit.
- Assemble Zener diode as voltage regulator
- Assemble a power supply using IC regulator
- Usage of oscilloscope
- Observing sine wave on an oscilloscope and determine its
 - peak and peak-to-peak value
 - r.m.s and average value
 - Wavelength, time period and frequency
- Draw the Circuit diagram of half / full wave rectifier
 - Procedures of Booting.
 - Booting DOS,
 - Windows 3.X Boot Process,
 - Windows 95/98/XP Booting Process.
 - Configurations of Windows & adding Device Drivers.
 - Disk scanning through Scandisk utility
 - Identification of the elements of windows start-up screen.
 - Identification of the icons, bars and elements of explorer windows.
 - Use explorer to work in files and folders.
 - Using windows help.
 - Running application programs under windows.
 - Introduction to Dos Commands.
 - Installation of other peripheral devices.
 - Identify different IC packages.
 - Identification of TTL and CMOS families.
 - Pin configuration of TTL, NOT, OR, AND, NOR, NAND gates.
 - Pin identification CMOS, NOT, OR, AND, NOR, NAND gates.



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- Verification of truth tables two input / three input OR gate.
- Verification of truth tables two input / three input AND gate.
- Verification of truth tables NOT gate.
- Verification of truth tables two input / three input NOR gate.
- Verification of truth tables two input / three input NAND gate.
- Conversion of NAND/NOR gates into NOT, OR, AND gates.
- Development of OR and AND gate by using discrete components.
- Build XOR and XNOR circuits using basis gates.

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Mobile Phone Repairing Course (6-Month Course)

SCHEME OF STUDIES


I.T. Fundamentals

| S.No | Main Topics | Theory Hours | Practical Hours | Total Hours |
|--------------|----------------------------|---------------------|------------------------|--------------------|
| 1. | Introduction to Computers | 2 | 6 | 8 |
| 2. | Typing - Microsoft Word | 4 | 14 | 18 |
| 3. | Internet & Electronic Mail | 2 | 12 | 14 |
| Total | | 8 | 32 | 40 |

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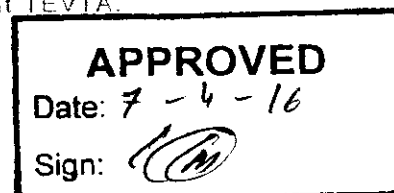
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DETAIL OF COURSE CONTENTS
I.T Fundamentals

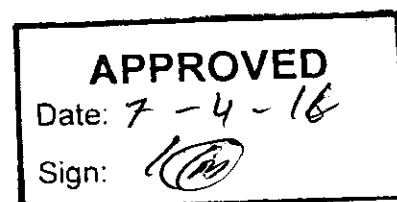
| S. No | Detail of Topics | Theory Hours | Practical Hours |
|-------|--|--------------|-----------------|
| 1 | <p>Introduction to Computers</p> <p>1.1 What is a computer- Definition, functions and general features?</p> <p>1.2 What is Hardware –</p> <p> 1.2.1 Computer parts and units</p> <p> 1.2.1.1 Input Unit - Keyboard, Mouse etc.</p> <p> 1.2.1.2 Central Processing Unit</p> <p> 1.2.1.3 Output Unit</p> <p>1.3 What is Software –</p> <p> 1.3.1 Electronic Parts of a Pc it is</p> <p> 1.3.1.1 Software and Its types</p> <p> 1.3.1.2 System Software, Application software and its functions</p> <p>1.4 Working with windows Operating System</p> <p> 1.4.1 How does windows desktops work?</p> <p> 1.4.2 Setting desktop, background and wall papers etc.</p> <p> 1.4.3 Viewing directories – List of files and folders different styles.</p> <p>1.5 What are the Icons, Shortcuts and other graphic,</p> <p> 1.5.1 How to see computer contents on different drives etc.</p> | 2 | 6 |
| 2 | <p>Typing and Word processing (MS Word)</p> <p>2.1 Proper way of typing correct and speedy - getting familiar with the keys</p> <p>2.2 Where to type in computer? How to save a file? How to get it back? Where to find your saved work?</p> <p>2.3 Formatting in MS Word Bold, Italic, page setup, setting shades and colors.</p> | 4 | 14 |



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| | | | |
|--------------|---|----------|-----------|
| | 2.4 Working with saved work, opening and moving files. | | |
| | 2.5 How to get it printed? | | |
| 3 | Emailing and Internet Surfing | 2 | 12 |
| | 3.1 How to go to Internet, what is required for an internet connection etc. | | |
| | 3.2 How to use email? How to search on web? Etc | | |
| | 3.3 How to make new email account, login and logout an email account etc.? | | |
| | 3.4 Downloading and uploading attachments etc. | | |
| Total | | 8 | 32 |

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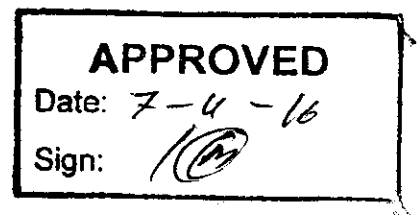
LIST OF PRACTICALS
I.T Fundamentals

| S. No. | Name of Practical |
|---------------|--|
| 1. | Turn On/Off and setting of power supply |
| 2. | Accessing The Desktop |
| 3. | Using of Icons and Shortcuts |
| 4. | Setting / customizing the desktop |
| 5. | Viewing the contents of computer – Directory |
| 6. | Setting the view of a folder |
| 7. | Copying, Deleting and Moving Files in a folder |
| 8. | Working with different Applications |
| 9. | Opening MS Word for typing |
| 10. | First lesson of Typing A S D F |
| 11. | Second Lesson of typing J K L ; |
| 12. | Third Lesson U I O P |
| 13. | Fourth Lesson R E W Q |
| 14. | Fifth Lesson N M , . |
| 15. | Sixth Lesson V C X Z |
| 16. | Seventh Lesson All letter using R index Finger |
| 17. | Eighth Lesson All letter using L index Finger |
| 18. | Formatting in MS Word Bold, Italic etc. |
| 19. | Page Setting/ Page Layout |
| 20. | Using Internet |
| 21. | Opening Email, making new account |
| 22. | Sending Receiving Emails |
| 23. | Downloading and uploading attachments etc. |

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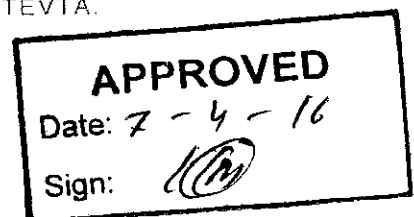
SCHEME OF STUDIES
Functional English

| S.No | Main Topics | Theory Hours | Practical Hours | Total Hours |
|--------------|---|--------------|-----------------|-------------|
| 1. | Use of past indefinite tense | 2 | 6 | 8 |
| 2. | Use of 'was' 'were' ' questions and negatives | 3 | 6 | 8 |
| 3. | Explaining a situations/ analysis | 2 | 6 | 8 |
| 4. | Communication in writing | 2 | 6 | 8 |
| 5. | Comprehension | 1 | 6 | 7 |
| 6. | Application/ C.V. | 1 | 6 | 7 |
| 7. | Dialogues | 1 | 9 | 10 |
| 8. | Understand vocabulary | 1 | 3 | 4 |
| 9. | Writing complaints/ answers to complaints | 1 | 9 | 10 |
| 10. | Interviews | 2 | 7 | 10 |
| Total | | 16 | 64 | 80 |




DETAIL OF COURSE CONTENTS
Functional English

| S. No | Detail of Topics | Theory Hours | Practical Hours |
|--------------|--|--------------|-----------------|
| 1 | Use of past indefinite tense 1.1 Describing past events | 2 | 6 |
| 2 | Use of 'was' 'were' ' questions and negatives | 2 | 6 |
| 3 | Explaining a situations/ analysis 3.1 Making a plan 3.2 Visiting factory area 3.3 Giving justifications | 2 | 6 |
| 4 | Communication in writing 4.1 Asking for list of stationery items 4.2 Submitting report of performance of team of technicians 4.3 Submitting joining report | 2 | 6 |
| 5 | Comprehension: practice sets | 2 | 6 |
| 6 | Job application/C.V. | 1 | 6 |
| 7 | Dialogues | 1 | 9 |
| 8 | Understand vocabulary | 1 | 3 |
| 9 | Writing complaints/ answers to complaints | 1 | 9 |
| 10 | Interviews | 2 | 7 |
| Total | | 16 | 64 |



LIST OF PRACTICALS
Functional English

| S. No. | Practical |
|---------------|------------------|
| 1. | Group discussion |
| 2. | Interviews |
| 3. | Role play |

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Mobile Phone Repairing Course (6-Month Course)

LIST OF LABS

Mobile Phone Repairing

- Mobile Repairing Lab

I.T Fundamentals

- Computer Lab

Developed by Curriculum Section, Academics Department TEVTA.

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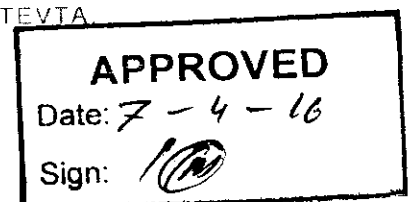


LIST OF TOOLS / MACHINERY & EQUIPMENTS

(For a Class of 25 Students)

| | |
|---------------------------|------------------------|
| Name of Course | Mobile Phone Repairing |
| Duration of Course | 6 – Months |

| Sr. No. | Name of Items | Quantity |
|----------------|--|-----------------|
| 1. | Surface mount device rework station | 5 Nos. |
| 2. | Micro Scope | 2 Nos. |
| 3. | Product specific jigs for different brands. | 2 Nos. |
| 4. | GSM test set | 2 Nos. |
| 5. | Universal antenna coupler with complete base station | 2 Nos. |
| 6. | Power supply digital | 10 Nos. |
| 7. | Storage box | 200 Nos. |
| 8. | Flash Programmer | 5 Nos. |
| 9. | Universal battery tester | 10 Nos. |
| 10. | Grounding station (EST / SMD) | 5 Nos. |
| 11. | Soldering Iron | 25 Nos. |
| 12. | Tool kits (for mobile repacking) | 25 Nos. |
| 13. | RF Signal generator 2000 MHZ | 2 Nos. |
| 14. | Digital / Analog, Multi meter | 10 Nos. |
| 15. | Digital Oscilloscope | 2 Nos. |
| 16. | Authenticator / Nokia software downloader | 25 Nos. |
| 17. | Wood bench | 25 Nos. |
| 18. | Magnified Inspection Glass With Light | 2 Nos. |
| 19. | Hot air gun | 2 Nos. |
| 20. | Basic Electronic Trainer | 5 Nos. |
| 21. | Digital Electronic Trainer | 5 Nos. |
| 22. | Communication Trainer | 5 Nos. |
| 23. | Screw Drivers torx 0.25,0.5,0.75,1 | 10 Sets. each |
| 24. | Philips Screw Drivers 00,0,1 | 10 Sets. Each |



Mobile Phone Repairing Course (6-Month Course)

| | | |
|-----|--|---------|
| 25. | Computer Set P-IV with accessories | 05 Nos. |
| 26. | Flat Screw Drivers 0 to 3.5 | 10 Sets |
| 27. | Running Mobile Sets of different types | 25 Nos. |
| 28. | Mobile Training Kit | 02 Nos. |

FURNITURE

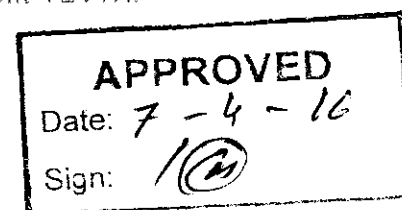
(For a Class of 25 Students)

| Sr. No. | Name of Items | Quantity |
|---------|------------------|----------|
| 1. | Split AC 1.5 Ton | 2 Nos. |
| 2. | White Board | 1 No. |
| 3. | Work Benches | 25 Nos. |
| 4. | Students Chair | 25 Nos. |
| 5. | Instructor Table | 1 No. |
| 6. | Instructor Chair | 2 Nos. |
| 7. | Steel Almara | 1 No. |

FURNITURE & EQUIPMENT FOR MOBILE REPAIRING LAB

| Sr. No. | Name of Items | Quantity |
|---------|---------------------------------|----------|
| 1. | Multimedia | 1 No. |
| 2. | Over Head Projector with Screen | 1 No. |
| 3. | Split AC 1.5 Ton | 2 Nos. |
| 4. | White Board | 1 No. |
| 5. | Table Let Chairs | 25 Nos. |
| 6. | Instructor Table | 1 No. |
| 7. | Instructor Chair | 1 No. |
| 8. | Steel Almara | 1 No. |

Developed by Curriculum Section, Academics Department TEVTA.




FURNITURE FOR WORKSHOP

(For a Class of 25 Students)

| Sr. No. | Name of Items | Quantity |
|---------|------------------|----------|
| 8. | Split AC 1.5 Ton | 2 Nos. |
| 9. | White Board | 1 No. |
| 10. | Work Benches | 15 Nos. |
| 11. | Students Chair | 15 Nos. |
| 12. | Instructor Table | 1 No. |
| 13. | Instructor Chair | 2 Nos. |
| 14. | Steel Almarah | 2 Nos. |


FURNITURE FOR MOBILE LAB

| Sr. No. | Name of Items | Quantity |
|---------|---------------------------------|----------|
| 9. | Multimedia | 1 No. |
| 10. | Over Head Projector with Screen | 1 No. |
| 11. | Split AC 1.5 Ton | 2 Nos. |
| 12. | White Board | 1 No. |
| 13. | Table Let Chairs | 25 Nos. |
| 14. | Instructor Table | 1 No. |
| 15. | Instructor Chair | 2 Nos. |
| 16. | Steel Almarah | 2 Nos. |

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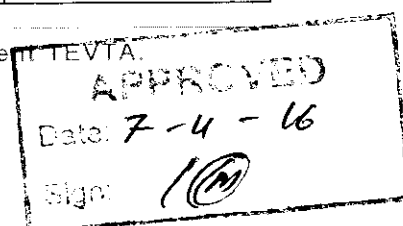
COMPUTER LAB

| S. No. | Tools / Equipment | Quantity |
|--------|--|--|
| 1. | Desktop computer (Specifications as per notification issued by MIS Section, TEVTA) | 26 (1 for each student & 1 for the teacher) |
| 2. | Printer (Laser) | 01 |
| 3. | Scanner | 01 |
| 4. | Internet Connection (At least 1 MB speed) | 01 |
| 5. | UPS 10 KVA | 01 |
| 6. | Air Conditioner 1 ½ Ton | 02 |
| 7. | Multimedia Projector | 01 |

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LIST OF CONSUMABLE MATERIALS

| S. No | Item Description | Quantity |
|-------|---|---------------|
| 1. | PVC Wire 3/29, 1/29 and 23/76 | Each 2 coils |
| 2. | Lamp 60w/200w | Each 6No,s |
| 3. | Switch, show, 2 way switch, socket, Multi-pin socket, lamp holder | Each 25 No,s |
| 4. | Copper coted Sheet 4'x4' | 5 No,s |
| 5. | PVC Board 7" x 4" with plastic plate and hole for 2switch, 1socket, 1socket multi-pin and 1 Lamp holder | 25 No,s |
| 6. | Resistor Different values | 500 No,s |
| 7. | Transformer 6v+6V, 220V input 3A | 10 No,s |
| 8. | Capacitor 1000uf /65v 100uf/35, 47uf/35V | Each 50 No,s |
| 9. | Diode IN4004/4007 | Each 100 No,s |
| 10. | LED red, green, blue and multi colour | 100 No,s Each |
| 11. | Huck up wire (flexible) | 5 coil |
| 12. | Board marker | 2 dozen |
| 13. | Permanent Marker fine Tip | 3 dozen |
| 14. | Zener Diode 6V,9V,12V 2watt | Each 25 No,s |
| 15. | Transistor C828,C1383,A684,2N3055 | Each 25 No,s |
| 16. | Variable Resistor 500 ohm and 1K Ω | Each 25 No,s |
| 17. | etching material | 2 Kg |
| 18. | charging pin different model (for Available mobile in stock) | 5 No,seach |
| 19. | Antenna different model (for Available mobile in stock) | 5 No,seach |
| 20. | Microphone different model (for Available mobile in stock) | 5 No,seach |
| 21. | Speaker different model (for Available mobile in stock) | 5 No,s Each |
| 22. | Motherboard different model (for Available mobile in stock) | 5 No,s Each |
| 23. | LCD different model (for Available mobile in stock) | 5 No,s Each |
| 24. | Board Gripper OR JIGdifferent model (for Available mobile in stock) | 5 No,s Each |
| 25. | Soldering wire | 5 No,s Each |
| 26. | Car phone charger different model (for Available mobile in stock) | 5 No,s Each |
| 27. | contact cleaner | 3 No,s |
| 28. | De soldering paste (imported) | 2 ten big |
| 29. | USB Charging cable different model (for Available mobile in stock) | 5 No,s Each |



Mobile Phone Repairing Course (6-Month Course)

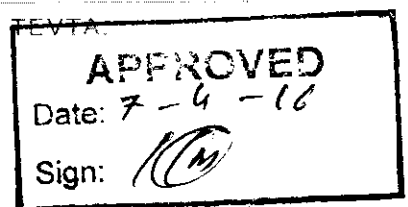
| | | |
|-----|---|-------------|
| 30. | Software with all accessories different model (for Available mobile in stock) | 5 No,s Each |
| 31. | Screen protector different model (for Available mobile in stock) | 5 No,s Each |
| 32. | Batteries different model (for Available mobile in stock) | 5 No,seach |
| 33. | Component storage box | 5 No,s Each |
| 34. | Screen protector different model (for Available mobile in stock) | 5 No,s Each |
| 35. | Computer interfacing cables different model (for Available mobile in stock) | 5 No,s Each |
| 36. | Casing different model (for Available mobile in stock) | 5 No,s Each |

Functional English

| S. No. | Item | Quantity |
|--------|---------------|--------------------|
| 1. | Stationary | As per requirement |
| 2. | Board Markers | As per requirement |

I.T Fundamentals

| S. No. | Item | Quantity |
|--------|----------------|--------------------|
| 1. | Printing Paper | As per requirement |
| 2. | Printer Toner | As per requirement |



MINIMUM QUALIFICATION OF INSTRUCTOR

- B.Sc. Engineering in Electronics / Electrical with 2 years relevant experience.

OR

- DAE in Electronics / Electrical Technology with 4 years experience in the relevant field.

OR

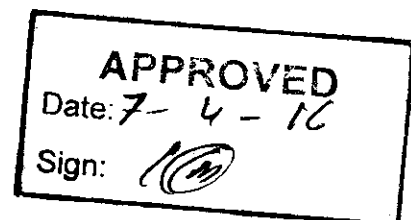
- Two years certificate of Electronics Applications (G-II Level) with 6 years experience in relevant field.

Functional English

- M.A (English)

I.T Fundamentals

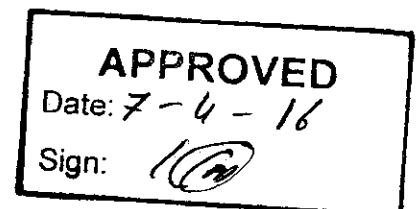
- DAE CIT/ BCS from HEC recognized university



EMPLOYABILITY OF PASSOUTS

The pass outs of this course may find job/ employment opportunities in the following areas:-

1. Mobile phone companies i.e. NOKIA, SONY ERICSSON, SAMSUNG, MOTOROLA, SIEMENS, and PANASONIC.
2. Customer service centers of NOKIA, SONY ERICSSON, SAMSUNG, MOTOROLA, SIEMENS, and PANASONIC.
3. Mobile phone repair work shops.



REFERENCE BOOKS

- Modern digital and analog communication system by BP Lathi
- Wireless Communication Principles and practice
- The Order Rappapost Modern digital & analog communication system
- Fundamentals of Electronic 3rd by Folyod
- Electronics principles by Maluim
- Electronics fundamentals circuits devices and applications Floyd

Functional English

1. High School English Grammar By Wren & Martin
2. Oxford English Grammar

I.T Fundamentals

1. Introduction to Computer by Peter Norton
2. 2007 Microsoft® Office System Step by Step by Joyce Cox, Steve Lambert and Curtis Frye
3. Internet and E-mail with Windows 7 by Studio Visual Steps



LIST OF TRADE RELATED JARGON

| Level of integration | انضمام کی سطح | Examples | مثال کے طور پر |
|---|--|--------------------------------|--------------------------------|
| Standards | معیارات | Paging | پیجنگ |
| Cause | وجہ | Basic | بنیادی |
| Up gradation | اپ گریڈیشن | Effect | اثر |
| Technique | ٹیکنالوجی | Skills | ہنر |
| Troubleshooting | خرابیوں کا سراغ لگانا | Problems | مسائل |
| Inspection | معائنہ | Methodology | طریقہ کار |
| Identification | شناخت | Organizer | آرگنائزر |
| Tele services | ٹیلی خدمات | Task | ٹاسک |
| Demonstration | مظاہرے | Protocol | پروٹوکول |
| GPRS (General Packet Radio Services) | GPRS (جنرل پیکیٹ ریڈیو سروسز) | Supplementary Services | اضافی خدمات |
| Safety rules | سیفٹی قوانین | Equipment | سامان |
| Electro Motive Force | الیکٹرو محرک | Benefits | فوائد |
| Measuring instrument | ماپنے آلہ | Specification | تفصیلات |
| S M card | SM کارڈ " | Percentage | فی صد |
| "Subscriber Identity Module for a mobile phone" | سبسکرائبر ایک موبائل فون کے لئے شناختی ماڈیول" | Around the world | دنیا کے گرد |
| Modulator | ماڈیولیٹر | Wireless/ Cordless | وائریس / بیے تار |
| Abbreviation | مخفف | Regulated | ریگولیٹ |
| Amplifier | یمپلیفائر | Light Emitting Diode | روشنی خارج کرنے والا دو برقیہ |
| Junction | جنکشن | Communication | مواصلات |
| Sinusoidal | منحنی موج | Mutual induction | باہمی انڈکشن |
| Impedance | مانیادا | Magnetic field | مقناطیسی میدان |
| Characteristics | خصوصیات | electromagnet | برقی مقناطیسی میدان |
| Rectification | ترمیم | Magnitude | مقدار |
| Bradawl | سوا | Making | بنانا |
| Capacitance | ظرفیت | Measurement | پیمانہ |
| Checking | جانچنا | Multiplication | ضرب |
| Components | حصے | Parallel | متوازی |
| Conductance | ایصالیت | GSM (global System for mobile) | GSM (موبائل کے لئے عالمی نظام) |
| Conductivity | کرنٹ گزارے کی صلاحیت | Plier | پلاس |
| Conductor | موصل | Power | طاقت |
| Connecting | جوڑنا | Principle | اصول |
| Consumer | صارف | Protective Device | حفاظتی آلہ |
| Current | برقی رو | Removing | ختم کرنا |
| Cutting | کاٹنا | Resistance | مزاحمت |
| Decimal | اعشاریہ | Resistivity | مزاحمت کی صلاحیت |
| Diagram | شکل | | |

Mobile Phone Repairing Course (6-Month Course)

| | | | |
|--|--|---------------------------------|---|
| Energy | توانائی | Reversing | سمت تبدیل کرنا |
| Equipment | آلات | Scissor | قینچی |
| Faults | نقص | Screw Driver | پیچ کس |
| File | ریٹی | Semi-Conductor | نیم موصل |
| First Aid | ابتدائی طبی امداد | Series | سلسلہ وار |
| Fixing | لگانا | Soldering | ٹانکا لگانا |
| Hacksaw | لوہا کاٹنے والی آری | Specific Resistance | مزاحمت مخصوصہ |
| Hammer | ھتوڑا | Structure | ساخت |
| Handling | کنٹرول | Tools | اوزار |
| Identification | شناخت | Tracing | تلاش کرنا |
| Installation | لگانا | Tri square | گنیا |
| Insulation | حاجز تہ | Understanding | سمجھنا |
| Insulation Remover | حاجز تہ اتارنے والا آلہ | Vermeer Caliper | ورنیر کیلیپر |
| Insulator | حاجز | Voltage | وولٹیج |
| Magnet | مقناطیس | Work | کام |
| Alternating Current | متغیر کرنٹ | Direct Current | یکساں کرنٹ |
| Assembling | جوڑنا | Flexible | لچکدار |
| Blender | بلینڈر | Heat Proof | حرارتی اثر سے پاک |
| Blinking | ٹمٹمانا | Heating Element | حرارتی ایلیمنٹ |
| Construction | ساخت | Remedies | علاج |
| Diagnose | نشاندہی کرنا | Revolving System | گھومنے والا سسٹم |
| Configuration | ترتیب | Communication | مواصلات |
| IMEI (International Mobile Equipment Identity) | IMEI (بین الاقوامی موبائل آلات شناختی) | SP lock (service provider lock) | ایس پی تالا (سروس فراہم کرنے والے تالا) |
| Access | رسائی | safety rule | حفاظت کی حکمرانی |
| Properly | مناسب طریقے سے | Gain | حاصل کرنا |
| Trends | رجحانات | Intelligent | ذہین |

Curriculum Revision Committee

1. **Muhammad Mahboob Butt,** **Convener**
Chief Instructor,
GCT Sahiwal

2. **Muhammad Yousaf Mirza,** **Member**
Sr. Instructor,
GTTI Gulberg-II, Lahore

