Mobile and Smart phone repairing person (MSPRA)
Syllabus
(Safety Practices 25 Hrs, Theory 100 Hrs, Practical 450 Hrs, Employability Skill 75 Hrs)

Details of Theory Syllabus

Sl. No.	CONTENT	DETAILS
1.	Safety in workplace (10)	● Procedures to achieve a safe working environment in line with occupational health and safety regulations ● Fire and safety hazards according to workplace policy and procedures. ● Report preparation for the event of accident or sickness of any staff, including accident details according to accident/injury procedures ● Personal Protective Equipment (PPE) and their use ● Basic first aid & CPR ● Different fire extinguishers and their use
2.	Introduction of basic Electronic components used in mobile phone (8)	Study of basic electronics components like coil, non-electrolytic & electrolytic Capacitor, coupler, Rectifier Diode, LED, Zener diode, photo diode, regulator, chip resistance, network resistance, transistor etc.
3.	Introduction to different types of mobile cell phones (7)	Basic Principles of Mobile Phones Study of different types of Mobile phones like ● Bar Phone ● Flip Phone ● Slider Phone ● Touch screen Phone
4.	Familiarization and working principle of different parts of a mobile cell phone (20)	To Study about different parts of mobile phones like ● Keypad ● Ear piece ● Mouth piece ● Battery ● Power switch ● Power switch ● Oscillator ● Screen or display ● Flash IC ● Charging IC ● CPU ● Antenna etc.
5	Knowledge of using hardware and software tools to repair mobile cell phones (20)	To study different types of Hardware tools like ● Soldering Iron ● PCB Holder / PCB Stand ● different Cutters ● Precision Screwdriver ● Tweezers ● Brush ● Multimeter ● Hot Air Blower ● Battery Booster ● Screwdriver Kit

		• Microscope • Test JIG Box • Battery Tester • LCD Tester etc. To study different types of Software tools like • Tenorshare ReiBoot • Phone Doctor plus • All-in-one Toolbox etc.
6	Introduction and working principle of different sections of Mobile phones for assembling and disassembling purpose (25)	To study about the assembling and disassembling of different internal sections of a Mobile Phone like • SIM card section • Memory card section • Ear Speaker Section • Speaker/Ringer Section • Key Backlight Section • LCD Backlight Section • Vibrator Motor Section • Network Section • Battery Charging Section • FM Radio Section • Bluetooth Section • Hands free (Earphone) Section .
7	Different types of mobile cell phone faults and to rectify them.(10)	Study to identify and to rectify Hardware faults like • Battery charging faults/problems due to false charging, not charging etc. • Mobile phone battery problem (faults) • Network not working problem • Overheating problem • Sound faults • Ear piece, ringer and microphone problem Lighting or LED problems • Keypad problems • SIM faults • Wi-Fi problem • internet connectivity problems • Display problems • Touch screen problems Study to identify and to rectify Software faults like Display problems • No signal message • Dead phone set • Phone on test mode Phone not charging • Phone has message to contact service provider • Phone hangs, goes off, freezes or has slow processing
8.	Introduction to different types of OS used in mobile	Study of different smart phone OS like ANDROID, Ios, windows etc.

	phone (10)	
Total		**110 hr**

SL NO	CONTENT (Any Eight)	DETAILS
1	Use of different types of tools required for repairing of mobile phones (100 hr)	1.1. Soldering technique for fixing of SMD components, ICs and connectors with hot air gun soldering station. 1.2. Desoldering technique for the removal of components from a PCB. 1.3. Procedure to measure resistance, voltage and current by using a multimeter for the PCB component of a mobile phone . 1.4. Procedure to use jumper to bypass faulty components. 1.5 Use of different types of software tools for repairing like • Tenorshare ReiBoot • Phone Doctor plus • All-in-one Toolbox etc 1.6 Use of different types of Mobile operating system (Android, Windows, iOS) 1.7 Use of a Battery Booster and a Battery Tester to boost or to test a Battery. 1.8 Use of a Test Jig Box to diagonose and find fault in a mobile phone. 1.9 Use of LCD LED universal tester check the display of a mobile phone. 1.10 Use of a BGA repair kit to reball and repair ball type ICs. 1.11 Use of Infrared Workstation for precise soldering and desoldering to prevent damage of nearby electronic components. 1.12 Use of smoke absorber during soldering and desoldering.
2	Fault diagnosis skill of mobile phones (50 hr)	2.1 Use of in built fault diagnostic tool for android mobile phone (e.g by pressing *#0*# we will be able to run a check up of phone's hardware) .Identify the faulty components by cold testing method i.e to use a multimeter to check the value of resistance during powered off condition 2.2 Identify the faulty components by hot testing method i.e to use a multimeter to check the value of voltage during powered on condition. 2.3 Interface of Mobile phone with PC to run various software diagnostic tool, formatting and installing of OS 2.4 Use of handset manufacturer specific technical database for optimal rectification options
3	Repairing of common Mobile phone faults (200 hr)	3.1 To rectify the intermittent faults like • excess temperature • excess current or voltage • ionizing radiation • mechanical shock • stress or impact • contamination • mechanical stress • short circuits • imperfect connections 3.2 To rectify the battery charging faults by • Cleaning, re soldering or changing the charger Connector • Changing the battery and check again

| | | ● Check the voltage of the battery connector using a Multimeter. The voltage should be between 1.5 and 3.7 Volts.

● Checking the fuse, coil and regulator one by one and change the faulty part.

● Changing the charging IC.

● Changing the Power IC

3.3 To rectify Mobile phone battery problem (faults) by

    ● Checking the battery connector and charging plug

    ● Upgrading the software to latest version

    ● Checking the Mobile phone PBA current consumption or any short circuit

3.4 To rectify the network problem by
    ● Cleaning the antenna tips and points
    ● Repairing or replacing the antenna switch
    ● Repairing or replacing the PFO
    ● Repairing or replacing Network IC
    ● Replacing the power IC or CPU
3.5 To rectify the sound problems by checking
    ● the speaker and microphone
    ● Earpiece
    ● Audio and power IC
    ● CPU
3.6 To rectify the display problems by
    ● Cleaning the display tip and display connector
    ● De soldering the display connector
    ● Checking the display track
    ● Changing the display
    ● Changing the display IC and /or CPU
3.7 To rectify the LED problems by
    ● Checking the light setting and re soldering all the LEDs
    ● Checking all the LEDs with the multimeter
    ● Changing the light IC, power IC and display
3.8 To rectify phone touch screen faults by
    ● Cleaning , resoldering and/or changing the PDA tips and connectors
    ● Checking the track of PDA section and/or changing the PDA IC, CPU
3.9 To rectify keypad problems by
    ● Cleaning the keypad and keypad points
    ● Using the multimeter to check the row and column of keypad
    ● Changing keypad IC/ and or CPU

3.10 To rectify SIM problems by
    ● Cleaning the SIM card tips and SIM connectors
    ● By changing the SIM card, SIM IC and power IC
3.11 To rectify software problems by |

		● Removing the application software that causes problems ● Reset the factory setting of mobile phones and update the software
10	Project	(100 hr)
11	Workplace Safety (15)	11.1 Writing a report regarding any unsafe situations according to workplace policy 11.2 Demonstrate safety alarms accurately. 11.3 Prepare report/record in the event of accident or sickness of any staff, including accident details according to accident/injury procedures 11.4 Demonstrate use of Personal Protective Equipment (PPE) as per related working environment. 11.5 Demonstrate basic first aid & CPR and use them under different circumstances. 11.6 Identify different fire extinguishers and use the same as per requirement in a mock drill
Total		**465 hr.**

Details of Project

Sl. No.	Content	Details
1.	Project	Assembling and dis-assembling of different sections of a typical mobile phone system.

Detail of Employability Skills Syllabus (75 Hrs)

Sl. No.	Content	Details
1.	English Literacy & Communication Skills	Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech) Transformation of sentences, Voice change, Change of tense, Spellings. Reading and understanding simple sentences about self, work and environment. Construction of simple sentences, Writing simple English. Speaking with preparation on self, on family, on friends, classmates, on know, picture reading gain confidence through role-playing. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to the previous communication. Communication and its importance, Principles of Effective communication, Types of communication – verbal, non-verbal, written, email, talking on the phone. Non-verbal communication –characteristics, components-Para-language, Body – language, Barriers to communication and dealing with barriers. Handling nervousness/ discomfort. Self-awareness, Importance of Commitment, Ethics and Values, Ways to Motivate Oneself, Personal Goal setting and Employability Planning. Manners, Etiquettes, Dress code for an interview, Do's & Don'ts for an interview, Problem Solving, Confidence Building, Attitude.
2.	I.T. Literacy	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of the computer. Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External

		memory like pen drive, CD, DVD etc, Use of Common applications. Basic operating of Word Processing, Creating, opening and closing documents, use of shortcuts, Creating and Editing of text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets Internet, Concept of the Internet (Network of Networks), Meaning of World Wide Web (www), Web Browser, Website, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT – ACT, types of cybercrimes.
3.	Entrepreneurship Skills	Entrepreneurship vs. management, Entrepreneurial motivation. Performance & Record, Role & Function of Entrepreneur, Qualities of a Good Entrepreneur, SWOT and risk analysis. Concept & application of PLC, Sales & Distribution Management. Different Between Small Scale &Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix. Preparation of Project. Role of Various Schemes and institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/non-financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme. Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure – Loan procurement – Banking Processes.
4.	Productivity & Quality Tools	Definition, Necessity, Meaning of GDP. Personal / Workman – Incentive, Production linked Bonus, Improvement in living standard. Industry Nation. Skills, Working Aids, Automation, Environment, Motivation. How improves or slows down. Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance. Meaning of quality, Quality characteristic. Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles. The idea of ISO 9000 and BIS systems and their importance in maintaining qualities. Purpose of Housekeeping, Practice of Good Housekeeping. Basic quality tools with a few examples

Outcomes

Outcomes to be assessed/ NOS to be assessed	Assessment criteria for the outcome
1. Apply safe working Practices	1. Trainees will be able to maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements according to workplace policy. 2. Trainees will be able to recognize any unsafe situations according to workplace policy, and assess his report accordingly. 3. Trainees will be able to take necessary precautions on fire and safety hazards and report according to workplace policy and procedures. 4. Trainees will be able to demonstrate safety alarms accurately. 5. Trainees will be able to prepare report/record in the event of accident or sickness of any staff, including accident details according to accident/injury procedures 6. Trainees will be asked to demonstrate Personal Protective Equipment (PPE) and use the same as per related working environment. 7. Trainees will be asked to demonstrate basic first aid & CPR and use them under different circumstances. 8. Trainees will be asked to identify different fire extinguishers and to use the same as per requirement in a mock drill
2. Identify and test different electronics component used in mobile phone	1. Trainees will be able to identify basic electronics components like coil, non-electrolytic & electrolytic Capacitor, coupler, Rectifier Diode, LED, Zener diode, photo diode, regulator, chip resistance, network resistance, transistor etc. 2. Trainees will be able to test basic electronics components as mentioned above.
3. Identify different types of mobile cell phones	1. Trainees will be able to identify the types of Mobile Handsets like Bar, Brick, Touch screen, Flip, Slider etc.
4. Identify the parts of a mobile cell phone	1. Trainees will be able to identify different parts of mobile phones like Keypad, Earpiece, Mouth piece, Battery, Power switch, power switch, oscillator, display, flash IC, Charging IC, CPU, Antenna etc.
5. Demonstrate various types of soldering & desoldering techniques used in mobile phone repairing.	1. Trainees will be able to demonstrate soldering & desoldering of SMD components, ICs and connectors from a PCB with hot air gun soldering station and infrared workstation.
6. Use the correct hardware and software tools to repair mobile cell phones	1. Trainees will be able to use the different hardware tools like ● PCB Holder / PCB Stand ● different Cutters ● Precision Screwdriver ● Tweezers ● Brush ● Multimeter ● Hot Air Blower ● Battery Booster ● Screwdriver Kit ● Microscope ● Test JIG Box

	● Battery Tester ● LCD Tester etc. 2. Trainees will be able to use the different software tools like ● Tenorshare ReiBoot ● Phone Doctor plus ● All-in-one Toolbox etc.
7. Demonstrate use of various types of smartphone Operating system like Android, iOS, windows and troubleshoot software faults.	1. Trainees will be able to demonstrate formatting, & Flashing technique of a Mobile phone. 2. Trainees will be able to remove virus from a mobile phone 3. Trainees will be able to unlock smartphones through software
8. Assemble and dis-assemble different internal parts of a mobile phone	1. Trainees will be able to assemble and disassemble different internal Parts of a Mobile Phone like ● SIM card section ● Memory card section ● Ear Speaker Section ● Speaker/Ringer Section ● Key Backlight Section ● LCD Backlight Section ● Vibrator Motor Section ● Network Section ● Battery Charging Section ● FM Radio Section ● Bluetooth Section ● Hands free (Earphone) Section
9. Identify and rectify faults in a cell phone.	1. 1.Trainees will be able to identify and rectify Hardware Faults like ● Battery charging faults/problems ● Mobile phone battery problem (faults) ● Network not working problem ● Overheating problem ● Sound faults ● Earpiece, ringer and microphone problem Lighting or LED problems ● Keypad problems ● SIM faults ● WiFi problem ● internet connectivity problems ● Display problems ● Touchscreen problems 2. Trainees will be able to identify and rectify software faults like ● Display problems ● No signal message

	● Dead phone set ● Phone on test mode Phone not charging ● Phone has message to contact service provider ● Phone hangs, goes off, freezes or has slow processing
10. Troubleshoot problems in circuit of a mobile phone by tracking circuit for various brands of mobile phones	1. Trainees will be able to rectify faults by circuit tracking through standard practice like measuring of voltage, resistance, current by multimeter and use of jumper to bypass the faulty circuit.
11. Understand and practice soft skills	1. The assessor will rate the trainee on his ability to practice soft skills, including clear and concise communication, in day to day work with the team and with higher authority
12. Demonstrate knowledge of concepts and principles of basic arithmetic and financial calculation. Apply knowledge of the specific area to perform practical operations	1. Apply basic knowledge of arithmetic calculations for arriving dimensional parameters as per drawing 2. Apply basic financial calculation to understand the cost of materials & labour and basic concepts of profit/loss. 3. Engage in basic banking transactions as a customer
13. Explain time management, entrepreneurship and manage/organize related task in day to day work for personal & social growth	1. Ascertain appropriate time for the assigned task 2. Execute the assigned task within the time frame 3. Manage own work within the specified time 4. Explain the importance & factors that affect the development of entrepreneurship 5. Identify service providers for developing entrepreneurs/ business establishments.