

Certificate Course in Mobile Repair and Maintenance (Certified Mobile Repair & Service Technician)

Preamble:

In the world of smart devices and on the go communication, mobile and allied gadgets are playing a very important role. The era of modern communication has changed every aspect of life from office to home, entertainment, day to day life, social life everything. The mobile devices are core electronics devices and if any problem occurs it needs to be immediately resolved. As more and more devices and technologies are there, requirement of trained and certified technicians is felt by the industry.

Objective:

- To prepare students with latest knowledge in mobile technology.
- To empower the students with the knowledge of mobile components, troubleshooting and repairing.

Expected Job Roles:

- Mobile Service Technician

Duration:

80 Hours - (Theory: 30 hrs + Practical: 50 hrs)

Course Outline:

Sl. No	Module Title	Duration (Hours)		
		Theory	Lab	Total
1	Introduction to Mobile Phone, Networks and Basic Electronics	7	3	10
2	Working Principles of Handset and Different Components	5	5	10
3	Introduction to Tools and basic Troubleshooting	2	8	10
4	Soldering, Desoldering and troubleshooting	3	7	10
5	Software Flashing	3	12	15
6	Troubleshooting	5	15	20
7	Communication Skills	5	0	5
	Total Duration	30	50	80
	Total Credits	2	2	4

Prerequisites:

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Eligibility:

10th Standard

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Detailed Syllabus and Learning Outcome:

S. No	Module Title	Topics	Duration (Hours)		Learning Outcome
			Theory	Lab	
1	Module-1 Introduction to Mobile Phone, Networks and Basic Electronics	1.0 Introduction to mobile phones 1.1 Generations of mobile phones 1.2 FHSS networks 1.3 GSM 1.4 Spread spectrum 1.5 CDMA 1.6 TDMA 1.7 Basic electronics components	7	3	After completion of this module, the candidate will be able to : <ul style="list-style-type: none"> • Know details about the generation of mobile phones. • Methodology of different networks.
2	Module – 2 Working Principles of Handset and Different Components	2.0 Handset Specific operating systems 2.1 Handset features & applications 2.2 Working principle of mobile handset 2.3 Components used in mobile handsets	5	5	After learning this module the participant will be able to <ul style="list-style-type: none"> • Identify components • working of different components in mobile handset
3.	Module – 3 Introduction to Tools and basic Troubleshooting	3.0 Tools & equipment used for repairing & maintenance of mobile handsets 3.1 Types of power supply & batteries 3.2 Boosting a battery 3.3 Troubleshooting basics	2	8	After completion of this module the participants will be able to <ul style="list-style-type: none"> • Know different tools used for mobile repairing • Know different types of battery and power supply
4.	Module – 4 Soldering, Desoldering and troubleshooting	4.0 Network problems 4.1 Power failure (dead) 4.2 Mobile phone hardware troubleshooting (water damage, hanging, charging & keypad problems) 4.3 Handsets assembly & disassembly 4.4 Soldering & desoldering	3	7	After attending this module the participants will be able to <ul style="list-style-type: none"> • Know how to do soldering and desoldering • Know different types of problem with mobile handset and how to repair it.

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		4.5 SMD rework station			
5.	Module – 5 Software Flashing	5.0 BGA IC's 5.1 Basics of Computer 5.2 Installation of software 5.3 Flashing 5.4 PC based diagnostic tools, mobile sets formatting 5.5 Used of secret codes	3	12	After attending this module the participants will be able to <ul style="list-style-type: none"> • Understand different flashing tools. • Do Flashing and will be able to update Mobile phones.
6.	Module – 6 Troubleshooting	6.0 Mobile software 6.1 Data cable 6.2 Card reader 6.3 Mobile display 6.4 Remove/replace Component & Mobile phone hardware troubleshooting 6.5.1 Troubleshooting through circuit diagram 6.5.2 Transmission 6.5.3 Transmitter filter 6.5.4 Microphone reception 6.5.5 Antenna 6.5.6 RF power amplifier 6.5.7 Local oscillator 6.5.8 Audio IC, speaker, charger etc.	5	15	After attending this module the participants will be able to <ul style="list-style-type: none"> • Troubleshoot and identify faulty components. • Know the relation different between Hardware and Software. • Identified and repaired faulty components.
7.	Module – 7 Communication Skills	7.0 Reading & writing skills 7.1 Communication skills 7.2 Time management skills 7.3 Team skills 7.4 Safety & Security	5	0	After attending this module the participants will be able to <ul style="list-style-type: none"> • Have a confident in speaking and writing skills. • Have a confident in working with a team and how to manage time.
Total Hours = 80 Hours			30	50	

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Examination & Certification:

NIELIT's NSQF Examination pattern will be followed for Examination & Certification.

Sl No	Examination Pattern	Duration in Minutes	Maximum Marks
1	Theory Paper – 1	90	100
2	Practical -1	120	60
3	Internal Assessment	-	20
4	Project/Presentation /Assignment	-	20
	Total		200

Note:

- Pass percentage would be 50% marks in each component, with aggregate pass percentage of 50% and above.
- Grading will be as under:

Grade	S	A	B	C	D
Marks Range (in %)	>=85%	>=75% - <85%	>=65% - <75%	>=55% - <65%	>=50% - <55%

- Theory examination would be conducted online and the paper comprise of MCQ and each question will carry 1 mark.
- Practical examination/Internal Assessment/ Project/Presentation/Assignment would be evaluated internally.
- Major Project/Dissertation would be evaluated preferably by External / Subject Expert including NIELIT Officials.
- Candidate may apply for re-examination within the validity of registration.
- The examinations would be conducted in English Language only.

Recommended hardware/software tools:

- Desktop Computer
- Soldering & Desoldering station
- Screw driver set
- Regulated Power Supply (RPS)
- Soldering lead and paste
- PCB Stand
- Magnifying Glass with stand
- Universal Flashing Box

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Faculty & Support / Lab Instructor:

1. One Faculty with BE / B.Tech (CS/ECE) or equivalent with Mobile Communication knowledge and relevant experience.
2. One Support / Lab Instructor with at least Diploma in (CS/ECE) or equivalent with Mobile Communication knowledge and relevant experience.

References:

1. Fundamentals of Cellular Network Planning and Optimization Ajay R. Mishra
2. The GSM System for Mobile Communications by Michel Muoly

Course Name	Certificate Course in Mobile Repair and Maintenance (Certified Mobile Repair & Service Technician)	Vertical	Mobile Repairing
Course Code		Rev No	R4
Prepared By	Benti Wanth	Proposed NSQF Level	3
NIELIT Centre	Kohima	Last Revised on	07.05.2019