



# AMITY UNIVERSITY

UTTAR PRADESH

## FORMAT FOR COURSE CURRICULUM

**Course Title: Mobile Phone Hardware Design**

**Course Code:**

**Credit Units:**

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
-	1	-	2	2

**Course Objectives:**

Aim of this course is to introduce the students the design, architecture and troubleshooting techniques related to Android phones. This includes various standards & error analysis related to measurement in mobile phones.

**Pre-requisites:**

Basic Electrical Engineering, Basic Electronics Engineering.

**Student Learning Outcomes:**

The student will be able to

- Design mobile phone hardware
- Analyse the requirements for hardware and software
- Evaluate the system performance

**Course Contents/Syllabus:**

	Weight age (%)
<b>Module I : Introduction to Mobile Architecture.</b> Introduction and Generations of mobile phones, study of mobile system architectures and hardware cards using block diagrams .Basic passive electronic components used in mobile phones. Handset Specific operating systems, features & applications, Working principle of mobile handset & Active Components using block diagrams.	35%
<b>Module II : Mobile Software, Hardware and Communication design.</b> Study of BGA IC's, Block diagram of IC and Installation of software, Flashing, PC based diagnostic tools, mobile sets formatting, used of secret codes. Types of Mobile software, Data cable, Card reader, Mobile display, Remove/replace Component & Mobile phone hardware design of (transmitter filter, microphone, receptor, Antenna, RF power amplifier, local oscillator, Audio IC, speaker, charger etc. ).	40%

<p><b>Memory , Processor and supply Requirements.</b> Layout design &amp; architecture of various processors used in mobile phones. Android &amp; window phone hardware and software design circuits, Memory requirements. Power supply requirements for Android and Window phones, their principle , construction and working using circuits.</p>	
<p><b>Module III : Maintenance &amp; Network Problems</b> Tools &amp; equipment used for mobile handsets, types of power supply &amp; batteries, boosting a battery, Troubleshooting basics. Network problems, Power failure , Mobile phone hardware troubleshooting (water damage, hanging, charging &amp; keypad problems), Handsets assembly&amp; disassembly, Soldering &amp; desoldering &amp;SMD rework station.</p>	<b>25%</b>

### Hands on experiment

1. Hands on practical for Jumping. A) Point to Point. B) Capacitor to Capacitor C) Track to Track. E) Track to Capacitor. F) Track to point. G) Capacitor to Point.
2. Jumpering for sim slots track and sim IC.
3. Charging Diagram, solution for charging using jumper.
4. Broken or missing track jumpering for speaker Ringer, Vibrator, Microphone.
5. Solution of Display, Keypad black light using.
6. Multimedia Memory Card Slot track broken or not detect memory card solution using jumpering.
7. Headphone connector jumpering.
8. Introduction and function of IC'S on the circuit and IC'S jumpering.
9. Rules of IC Replacement and Replacing with practical.

### Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio/SW (%)	Total (%)
<b>0</b>	<b>100</b>	<b>100</b>

### Lab/ Practical/ Studio/SW Assessment:

Internal Components (Drop down)	Presentation (P)	Home Assignment (HA)	Case Discussion (CD)	Project	Viva Voce (V)	Attendance (A)
<b>Weightage (%)</b>	<b>10</b>	<b>10</b>	<b>20</b>	<b>40</b>	<b>15</b>	<b>5</b>

## **Text & References:**

1. Mobile Handset Design, Sajal K. Das, Wiley, 2010(<https://www.oreilly.com/library/view/mobile-handset-design/9780470824672/>)
2. Mobile First, Luke Wroblewski, A Book Apart; First Edition edition (2011)