

J11-01
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)
EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

Programme Outcome	
PO1	To study about the various components of the computer hardware
PO2	To assemble a computer given the different peripherals of the system
PO3	To study the various peripherals of Computing Systems and their related troubleshooting activities
PO4	To provide insights on the installation and configuration of the various hardware peripherals.
PO5	To study about the various components that can be connected with a computer
PO6	To understand of networking principles associated with computing devices
PO7	To provide insights on the mobile devices and its components
PO8	To provide knowledge on Mobile phone faults and its related troubleshooting
PO9	To create a expertise in handling the hardware systems in addition to software expertise
PO 10	To demonstrate the skills needed to become an entrepreneur

Programme Specific Outcome	
PSO1	Demonstrate understanding of the principles and working of the hardware aspects of computer systems
PSO2	Assemble, test and evaluate the working of a computer
PSO3	Installation and configuration of peripherals
PSO4	Detailed study of computer peripherals and its related troubleshooting
PSO5	Repair and Diagnose all kinds of problems in Mobile Phone handsets

**Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014**

**CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE**

(Under Choice Based Credit System)

EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

SCHEME OF EXAMINATIONS

Year	Level	Course Code	Course Name	MARKS			Hrs. / Week	Exam. Duration (Hrs.)	Category
				CA	TEE	TOTAL			
I	Certificate	20343A	Introduction to Hardware System	25	75	100	3	3	THEORY
		20343P	Hardware Lab-I	40	60	100	3	3	PRACTICAL
II	Diploma	20343B	PC Hardware, Diagnostics and Troubleshooting	25	75	100	3	3	THEORY
		20343Q	Hardware Lab-II	40	60	100	3	3	PRACTICAL
III	Advanced Diploma	20343C	Mobile Hardware	25	75	100	3	3	THEORY
		20343R	Mobile Hardware Lab	40	60	100	3	3	PRACTICAL

J II - 02
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014

CAREER ORIENTED COURSE

COMPUTER HARDWARE MAINTENANCE

(Under Choice Based Credit System)

MAPPING OF COURSES WITH PROGRAMME OUTCOME LEVELS

Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
20343A	Introduction to Hardware System	3	3	3	1	2	1			2	2
20343P	Hardware Lab-I	3	3	2		3				2	2
20343B	PC Hardware, Diagnostics and Troubleshooting	2	2	3	3	3	2			2	
20343Q	Hardware Lab-II	2	2		2	3	1			2	
20343C	Mobile Hardware	1						3	3	2	3
20343R	Mobile Hardware Lab	1						2	2	2	3

Indicators: 1. Reasonable 2. Significant 3. Strong



JII - 03
2020-21

JII-04
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)
EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

Level	Course Code	Course Title	Theory/ Practical	Problems %	Theory %
Certificate	20343A	Introduction to Hardware System	Theory	-	100

Objective of the Course: The objective of this course component is to introduce PC evolution, Socket types and Peripherals of a system.

UNIT I: Introduction and Processor Evolution (Teaching hours: 10)

Introduction to computers and processors- History of the PC- Intel Core Processors -Intel Core 2 Family -Intel (Nehalem) Core i Processors - AMD K10 Processors, Athlon II,- AMD Fusion Processors -Processor Cooling –Heatsinks-Liquid cooling thermally- advantaged Chassis -Processor Troubleshooting Techniques

UNIT II: Types of Motherboards and Classification (Teaching hours: 10)

Motherboards -Motherboard Form Factors -Intel Chipsets-Intel 5x Series Chipsets -Intel 6x Series Chipsets -Third-Party Chipsets for Intel Processors-SiS Chipsets -ULi Electronics Chipsets-ATI Chipsets -VIA Chipsets-NVIDIA Chipsets for Intel Processors-Chipsets for AMD Processors-AMD Athlon Chipsets -VIA Chipsets -SiS Chipsets -NVIDIA Chipsets -Super I/O Chips

UNIT III: Audio and Video Hardware (Teaching hours: 10)

Audio hardware- Audio Hardware Concepts and Terms-The Nature of Sound -Evaluating the Quality of Your Audio-Hardware-DirectX and Audio Support- 3D Gaming Audio Standards-Advanced Audio Features-Sound Drivers-Sound Cards for Sound Producers-Motherboard Chipsets with Integrated audio-Speakers -Speaker Selection Criteria -Theater and Surround Sound-Microphones

Video hardware-Display Adapters and Monitors-Video Adapter Types-Integrated Video/Motherboard-Chipsets-Video Adapter Components-Identifying the Video and System-Video Troubleshooting and Maintenance-Troubleshooting Video Cards and Video Drivers

UNIT IV: Types of Memories (Teaching hours: 10)

Memories- Memory Basics -ROM-DRAM -Memory Standards-Memory Modules-Magnetic Storage -Definition of a Hard Disk-Disk Formatting-Basic HDD Components- Flash Memory Devices - SSD -USB Flash Drives Comparing Flash Memory Devices

UNIT V: Input and Output Devices (Teaching hours: 10)

I/O Devices: Keyboards -Keyboard Technology -The Keyboard Interface -Keyboard Troubleshooting and Repair -Pointing Devices -Optical Mice -. Optical Technology-DVD- DVD Tracks and Sectors-Handling DVD Errors-DVD Formats and Standards-printers-scanners

JII - 05
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)
Course Outcome mapping with Knowledge level

Course Outcome	CO Statement	Knowledge level
CO1	Provides an insight on the Processor Evolution	K1, K2
CO2	Briefs on the types of Motherboards and Classification	K2, K3
CO3	Elaborates on the various Audio and Video related concepts and peripherals	K3, K4
CO4	Storage devices such as primary and secondary are studied	K3
CO5	The various Input, output devices and their related troubleshooting are studied.	K4&K5

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	2	2	2						1
CO2	2	3	3	3					1	2
CO3		1	1	3	2				2	2
CO4	1	2	3	3	2					3
CO5	1	2	1	3	2					3

Indicators: 1. Reasonable 2. Significant 3.Strong

Text Books				
S.No.	Title	Author	Publishers	Publication Year & Edition
1	Upgrading and Repairing PCs	Scott Mueller	Prentice Hall of India	2011, 20 th Edition

Pedagogy: Lecture, PPT presentation, Assignment, Quiz, Group Discussion

JII - 06
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)
EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

Level	Course Code	Course Title	Theory/ Practical	Problems %	Theory %
Certificate	20343P	Hardware Lab-I	Practical	-	-

Objective of the course: This course provides practical knowledge about the various peripherals of the computer system

1. Computer Assembly
2. Setting up BIOS
3. Various types of Motherboards and ports
4. Configuration of various printers
5. Configuration of scanners
6. Partitioning and formatting hard disk drives
7. Low level formatting of hard disks
8. Identifying memory size and analyzing types of memories

Course Outcome mapping with Knowledge level

Course Outcome	CO Statement	Knowledge level
CO	The course enables to understand the fundamental hardware components that make up a computer's hardware and the role of each of these components	K4 & K5

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme Outcomes

Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO	3	3	2		3				2	2

Pedagogy: Demonstration, Experiments

J11 - 07
2020 - 21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)
EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

Level	Course Code	Course Title	Theory/ Practical	Problems %	Theory %
Diploma	20343B	PC Hardware, Diagnostics and Troubleshooting	Theory	-	100

Objective of the Course: The main objective of this course component is to introduce the basics of Optical storage, Video, Audio devices and troubleshooting them.

UNIT I: PC Power Supply

(Teaching hours: 10)

Power Supply: Switched Mode Power supplies – Power requirements – Testing the power supply – Diagnosing the problems – Replacing the power supply.

Power Supply Maintenance: Components of power supply – power supply connections – power supply maintenance – saving power – Upgrading the power supply – Protecting the PC from AC.

UNIT II: Operating System and Installations

(Teaching hours:10)

Operating Systems: Introduction to OS- Microsoft Operating Systems (DOS, linux Versions and Windows versions). Introduction to Mobile Operating System: Windows – iOS – Android.

Installing Windows: Pre-installation Checks-Setup Methods- The Setup Process- Re-starting the Computer and Finishing the Installation; Setup Failure and Recovery; Windows Setup Files; Windows Installation walk-through.

UNIT III: Linux Operating System

(Teaching hours: 10)

Installing Linux: Pre-installation Checks; Setup Methods; The Setup Process; Re-starting the Computer and Finishing the Installation; Setup Failure and Recovery; linux Setup Files; linux Installation walk-through

UNIT IV: Device Driver Configurations

(Teaching hours: 10)

Configuring Drivers: Configuring Windows Drivers; Configuring linux Drivers- Requirements of Plug and Play; The Device Manager; Configuring Printing using various WindowsOS, linux OS. **Introduction to viruses:** Types of Viruses - How viruses spread - Virus detection programs - Virus prevention & removal - Antivirus vaccines

UNIT V: PC Diagnostics and third party utilities

(Teaching hours: 10)

PC Diagnostics, Testing, and Maintenance: PC diagnostics – Diagnostics software – The POST – The Boot Process – PC Maintenance Tools: Hand tools – Safety – Test equipment.

Windows third party utilities – NDD, Disk Manager, Hiren Boot CD, Partition Recovery, Partition Magic, Data Recovery

JII-08
2020-21

**Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)**

Course Outcome mapping with Knowledge level

Course Outcome	CO Statement	Knowledge level
CO1	PC Power Supply	K2 & K3
CO2	Windows Installations	K2,K3 & K5
CO3	Linux Operating System	K2,K3 & K5
CO4	Device Driver Configurations	K2,K3 & K4
CO5	PC Diagnostics and third party utilities	K4 & K5

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	3	1			1	1			
CO2				3	3	2				1
CO3				3	3	2				1
CO4	2	2	3	2		3	1	2		1
CO5	1	2	3	2		3	1	1		2

Indicators: 1. Reasonable 2. Significant 3.Strong

Text Books				
S.No.	Title	Author	Publishers	Publication Year & Edition
1	Upgrading and Repairing PCs	Scott Mueller	Prentice Hall of India	2011, 20 th Edition

Pedagogy: Lecture, PPT presentation, e-content seminar, Assignment, Quiz, Group Discussion

JII-09
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)
EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

Level	Course Code	Course Title	Theory/ Practical	Problems %	Theory %
Diploma	20343Q	Hardware Lab-II	Practical	-	-

Objective of the course: This course will enable the student to gain the knowledge required to assemble and configure components. Troubleshooting of the various devices is also covered here.

1. Measurement of voltage in SMPS and power good signal.
2. Configuration of various devices
3. One click maintenance using diagnostic software
4. Installation of Windows Operating System
5. Configuring the devices in Windows
6. Troubleshooting Windows OS
7. Troubleshooting Hardware with OS
8. Usage of Third party Utilities

Course Outcome mapping with Knowledge level

Course Outcome	CO Statement	Knowledge level
CO	This course helps to understand the typical hardware and operating system problems encountered by technicians, teaching troubleshooting and gives the skills to solve problems	K4 & K5

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO	2	2		2	3	1			2	

Pedagogy: Demonstration, Experiments

JII - 10
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)

EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

Level	Course Code	Course Title	Theory/ Practical	Problems %	Theory %
Advanced Diploma	20343C	Mobile Hardware	Theory	-	100

Objective of the Course: The objective of this course component is to provide insights on the mobile hardware devices and components.

UNIT I: Mobile Devices

(Teaching hours: 10)

Mobile Devices- Use of tools & instruments used in mobile phone repairing- Details of various components used in mobile phones- Basic parts of mobile phones (mic, speaker, buzzer, LCD, antenna)-Use of multimeter- Use of battery booster.

UNIT II: Motherboard for mobiles

(Teaching hours: 10)

Basic Circuit Board / Motherboard Introduction- Assembling & disassembling of different types of mobile phones- Soldering & desoldering components using different soldering tools- IC Types - Work of different ICs- Working on SMD / BGA ICs and the PCB.

UNIT III: Components of Mobile phone

(Teaching hours: 10)

Basic electronics components - Spread spectrum, CDMA, TDMA & GSM, Tools & equipment used for repairing & maintenance of mobile handsets, types of power supply & Troubleshooting basics.

UNIT IV: Mobile Software

(Teaching hours: 10)

Basics of Computer Installation of mobile software, Flashing, PC based diagnostic tools, mobile sets formatting, used of secret codes.

UNIT V: Case Study

(Teaching hours: 10)

Case study: Study on mobile phones (touch screen types)

J11-11
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)

Course Outcome mapping with Knowledge level

Course Outcome	CO Statement	Knowledge level
CO1	Mobile Devices	K1
CO2	Motherboard for mobiles	K2
CO3	Components of Mobile phone	K3, K4
CO4	Mobile Software	K4
CO5	Case Study	K4, K5

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1				1	1	1	2	2	2
CO2	1	2			1	3	3			
CO3			2	3	2	2		3	1	
CO4			3	2	3	3	3	2	3	
CO5		2	3	2	3	3	3	3	2	3

Indicators: 1. Reasonable 2. Significant 3.Strong

Text Books				
S.No.	Title	Author	Publishers	Publication Year & Edition
1	Advance Mobile Repairing: (Multicolour Circuits, Service Diagrams & Repairing)	Pandit Sanji	BPB Publications	2010, First Edition
2	Modern Mobile Phone Repairing Using Computer S/W & Service Devices	Mohanar Lotia	BPB Publications	2006, First Edition

Pedagogy: Lecture, PPT presentation, e-content seminar, Assignment, Quiz, Group Discussion

J11-12
2020-21

Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014
CAREER ORIENTED COURSE
COMPUTER HARDWARE MAINTENANCE
(Under Choice Based Credit System)
EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

Level	Course Code	Course Title	Theory/ Practical	Problems %	Theory %
Advanced Diploma	20343R	Mobile Hardware Lab	Practical	-	-

Objective of the course: This paper provides practical knowledge about the mobile phones and the related troubleshooting aspects

1. Basic and Special Components of Mobile Phone.
2. Technique of Soldering and using Surface Mounting Device (SMD) Rework Station.
3. Water Damage and Washing of Mobile Phone.
4. Introduction and testing of SMD Components. .
5. Finding and fixing faults on cell phone
6. Installing and Removing Connector, Display flex, Folding and Sliding Handset flex Cable.
7. Using Secret codes on Cell Phone
8. Flashing a Cell Phone

Course Outcome mapping with Knowledge level

Course Outcome	CO Statement	Knowledge level
CO	The course includes Generations of mobile phones, components used in mobile handsets, mobile phone hardware troubleshooting (water damage, hang, charging problems, network problems, power failure, keypad problems etc.), installation of software, flashing, use of secret codes, PC based diagnostic tools. Students should be able to troubleshoot and repair the given handset at the end of the course	K3, K4 & K 5

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO	1						2	2	2	3

Pedagogy: Demonstration, Experiments