# CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
# FACULTY OF TECHNOLOGY & ENGINEERING
# DEPARTMENT OF INFORMATION TECHNOLOGY
# IT144: ICT Workshop
# B TECH 1ST SEMESTER (CE/IT/EC)

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## Credits and Hours:

| Teaching scheme | Theory | Practical | Total | Credit |
|---|---|---|---|---|
| Hours/week | 0 | 02 | 02 | 01 |
| Marks | 0 | 50 | 50 | |

**1. Objective of the course:**

The main objectives for offering the course computing & programming are:

- To explain the fundamentals of computers and peripherals.
- To introduce hardware and software computers basics.
- To deliver concept and methodology of different parts of computer and their assembling.
- To give descriptions of keyboard, monitors, printers, motherboard, etc.
- To brief the students regarding computer networks and connections.
- To give clear idea of pc trouble shooting and repairing.
- To introduce the basic concepts of Electronic components and devices/Instruments used in Laboratory. The course would focus to troubleshoot and analysis with Electronic circuits.

**B. Detailed syllabus**

Following contents will be delivered to the students during laboratory sessions.

| Sr. No. | Subject content |
|---|---|
| 1. | **Introduction to computer hardware**<br>1.1 definition of computer<br>1.2 computer hardware, software and firmware<br>1.3 history of computer<br>1.4 classification of computer<br>1.5 basic parts of digital computer<br>1.6 general faults of computer system |

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| **2.** | **Motherboard**<br>2.1 types of motherboard<br>2.2 functional block diagram of motherboard<br>2.3 cpu and supporting chips<br>2.4 bios<br>2.5 cmos setup<br>2.6 types of buses on the motherboard<br>2.7 jumper setting on motherboard<br>2.8 connectors on motherboard<br>2.9 battery on motherboard<br>2.10 faults of motherboard |
| **3.** | **Pc troubleshooting**<br>3.1 hardware troubleshooting and repairing<br>3.2 software troubleshooting and repairing |
| **4.** | **Display unit**<br>4.1 types of monitor<br>4.1.1 crt monitor<br>4.1.2 lcd monitor<br>4.2 faults of monitor<br>4.3 display card |
| **5.** | **Keyboard and mouse**<br>5.1 types of keyboard<br>5.1.1 wired keyboard<br>▪ Din type keyboard<br>▪ Ps/2 type keyboard<br>▪ Usb keyboard<br>5.1.2 wireless keyboard<br>▪ Bluetooth keyboard<br>▪ Infrared(ir) keyboard<br>▪ Radio frequency keyboard<br>5.2 types of keyboard switches<br>5.3 faults of keyboard<br>5.4 types of mouse<br>5.4.1 wired mouse<br>▪ Serial port mouse<br>▪ Ps/2 type mouse<br>▪ Usb mouse<br>5.4.2 wireless mouse<br>▪ Bluetooth mouse |

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| | ▪ Infrared(ir) mouse<br>▪ Radio frequency mouse<br><br>5.5 faults of mouse |
| **6.** | **Printer**<br>6.1 general features of printer<br>6.2 classification of printer<br>6.2.1 impact printer<br>▪ Dot matrix printer<br>▪ Line printer<br><br>6.2.2 non impact printer<br>▪ Thermal printer |
| **7.** | **Power supply**<br>7.1 smps<br>7.1.1 working principle of smps<br>7.1.2 block diagram of smps<br>7.1.3 difference between linear power supply and ups<br>7.1.4 output connectors of smps<br>7.1.5 faults of smps<br>7.2 ups<br>7.3 stabilizer |
| **8.** | **Secondary storage devices**<br>8.1 types of memory<br>8.2 floppy disk<br>8.3 hard disk<br>8.4 cd drive<br>8.5 dvd drive |
| **9.** | **Assembling the computer system**<br>9.1 study of configuration of computer system<br>9.2 introduction of computer assembling<br>9.3 instruction for assembling the computer system<br>9.4 instruction for disassembly the computer system<br>9.5 calculation of power supply requirement for the computer laboratory<br>9.6 calculation of a.c. requirement for the computer laboratory<br>9.7 calculation of ups requirement for the computer laboratory |
| **10.** | **Installation of various os** |
| **11.** | **Configuration & troubleshooting installation of os** |
| **12** | **Basics of electronics**<br>12.1 Introduction to basic components (Resistors , Capacitors, Inductors, Bread board, soldering iron, de soldering machine, cutter, all types of connecting wires and all connectors ) |

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| | 12.2 Introduction to basic semiconductor components(Diode, Transistor, Logic Gates, LED)<br>12.3 Introduction to different types of Power supply<br>12.4 Troubleshooting with Multi-meter<br>12.5 Study of front panel of Function generator<br>12.6 Study of front panel of C.R.O. (cathode ray oscilloscope) and Spectrum Analyzer<br>**12.7** Introduction to different Kinds of P.C.B.(single layer P.C.B, double layer P.C.B, multi-layer P.C.B) |

**C. Instructional method and pedagogy:**

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Laboratories will be conducted with the aid of multi-media projector, white board, computers, OHP etc.
- Attendance is compulsory in laboratory. This, including assignments/tests/quizzes carries 10 marks in overall evaluation.

**D. Student learning outcome:**

By taking this course,

- Students will be having the basic knowledge of computer architecture, peripherals and all the hardware and software basics required for a computer engineering student.
- Students will be able to effectively solve any hardware/software troubleshooting problem.
- Students will be able to understand working of various components of computers.
- Student will able understand requirement of operating system.
- Students are able to design and develop high performance computing system.
- Student will Able to understand designing of electronic circuits Able to design different electronics projects

**F. Recommended study material:**

**Reference books:**


1. The Complete PC Upgrade and Maintenance Guide, 16th Edition, Mark Minasi, Quentin Docter, Faithe Wempen, SYBEX publication
2. Ibm Pc And Clones Govindarajulu, Tata McGraw Hill
3. “Printed Circuit Boards: Design and Technology”, Bosshart, Tata McGraw Hill Orcad/PCBII, “User’s Guide”.

**URL Links:**

1. http://www.technologystudent.com/elec1/resist1.htm
2. http://www.electronics-tutorials.ws/capacitor/cap_1.html
3. http://en.wikipedia.org/wiki/Inductor
4. http://www.radio-electronics.com/info/formulae/inductance/inductor-inductive-reactance-formula e-calculations.php
5. http://alternatezone.com/electronics/files/PCBDesignTutorialRevA.pdf
6. http://www.scribd.com/doc/39508404/CRO-Manual