# LOK JAGRUTI KENDRAUNIVERSITY

Syllabus for **LJ School of Computer Applications &Technology (Integrated)**

Semester- I

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|---|---|---|---|---|
| **Course Code** | **150120102** | | | |
| **Category** | **Core Subject** | | | |
| **Course Title** | **Fundamentals of Computer Organization (FCO)** | | | |
| **Scheme and Credits** | **Theory** | **Tutorial** | **Lab** | **Credits** |
| | **4** | **1** | **0** | 5 |
| **Pre-requisites (if any)** | - | | | |

## 1. Course Objectives:

| Sr. | Course Outcome (Learner will be able to) |
|---|---|
| 1 | To understand the basics of the computer. |
| 2 | To understand the various number systems and their applications. |
| 3 | To design the logical circuit using gates as per the requirement. |
| 4 | To understand various storage devices and buses used in the computer system |

## 2. Course contents:

| Module | Content | Weightage |
|---|---|---|
| **Unit I** | **Working With Computer System**<br><br>What is computer, applications of computer, architecture of computer, basic components of computer with their usage, peripheral devices of computer with their usage, various types of data storage devices, types of the computer (personal computer, mobile, tablet, smart devices, workstation, minicomputer, main frame, supercomputer, server).<br><br>criteria for buying the computer system, booting steps of computer system, basic computer settings (like computer name, work group, ip, dns, proxy server, password, users, etc.) basic trouble shooting of the computer system, various slots of mother board, optimizing the computer performance, plug & play concepts, installing drivers, installing printers & scanners, working with internet drive storage | **20%** |

| | | |
|---|---|---|
| **Unit II** | **Memory and Buses**<br><br>Storage devices, primary and secondary storage devices, volatile memory : RAM,DRAM, SDRAM, DDR, GDDR, SRAM ; Non Volatile Memory: ROM, PROM, EPROM, EEPROM; cache memory;<br><br>Magnetic storage device : floppy diskette, hard drive or hard disk, magnetic strip, cassette tape; optical storage devices: Blu-ray disc, cd-rom disc, cd-r and cd-rw disc, dvd-r, dvd-rw; flash devices: usb flash drive, memory card, memory stick, solid state drive; network storage; cloud storage; paper storage: omr, punch card ;<br><br>Introduction to buses: interfacing buses (circuit diagrams not necessary), concepts of address bus, data bus and control bus, bus width (circuit diagrams not necessary) | **25%** |
| **Unit III** | **Working with Number System**<br><br>Number system, understanding decimal number system, bi-stable devices, binary number system, counting in binary system, binary addition and subtraction, converting binary to decimal and decimal to binary, weighted code, BCD code, octal and hexadecimal number system, use of complements to represent negative numbers in binary and other number systems, inter conversion of binary, octal, decimal and hexa decimal number system. | **25%** |
| **Unit IV** | **Circuit Design With Logic Gates**<br><br>Boolean algebra, logic gates, logical multiplication, AND gate OR gate, NOT gate, XOR & XNOR gate, evaluation of logical expression.<br><br>Evaluation of an expression containing parenthesis, basic laws of Boolean algebra, proof by perfect induction, simplification of expressions, De-Morgan's theorems, basic duality of Boolean algebra, derivation of a Boolean algebra.<br><br>K-MAP, rules of K-MAP, 2 variable K-MAP, 3 variable K-MAP, 4 | **30%** |

**3. Desirable:**

1. Installation of any one operating system
2. Report on JK flip flop, D flip flop, T flip flop, master slave flip flops (Each flip flop must be with truth table, circuit diagram, applications and limitations
3. Poster paper of generation of computer system

**4. Main Text Books:**

1. Digital Computer Fundamentals, Tata McGraw Hill, 6th Edition, Thomas C. Bartee
2. Computer System Architecture, PHI/Pearson Education, 3rd Edition, M. Morris Mano
3. Digital Logic and Computer Design, PHI Publication, 6th Edition, M. Morris Mano.
4. Introduction to Computers, Peter Notion, 7th Edition, McGraw Hill.
5. How Computers Work, By Ron White, Ninth Edition, Pearson Education.

**5. Accomplishment of the student after completing the course**:

1. Can identify the components of the computer system.
2. Can understand how the data are stored and manipulated by the computers.

3. Can design customized number system.
4. Can design the circuit as per the any given input and output combinations.
5. Can design custom built various basic components of the computer system like: memory using flop flops, adder, multiplexer, etc.
6. Can understand how the programme written in any higher level language can be translated in lower level language.