# 17HS004 FUNDAMENTALS OF COMPUTER SCIENCE-I

**Course Description and Objectives:**

This course introduces computer science through three of its major fields: hardware systems (physical components, digital logic, and computer architecture), theory and algorithms (Boolean algebra, binary arithmetic, and theory of computation), and software systems (languages, compilers, computer graphics, operating systems, and computer networks.) Programming assignments are used as means to introduce and reinforce fundamental computing concepts, as well as computer programming skills that are useful beyond this course. The course provides elements now essential to understand and effectively interact with the information technology infrastructure of today's world.

**Course Outcomes:**

Upon completion of the course, the student will be able to achieve the following outcomes:

| COs | Course Outcomes |
|---|---|
| **1** | Demonstrate the use of mathematical software and solve simple mathematical problems. |
| **2** | Explain the needs of hardware and software required for a computation task. |
| **3** | State typical provisions of cyber law that govern the proper usage of Internet and computing resources. |
| **4** | Explain the working of important application software and their use to perform any engineering activity. |
| **5** | Demonstrate the use of Operating system commands and shell script. |

**UNIT - 1**

**COMPUTING SYSTEMS:** Introduction to computer, Computers for individuals, Importance of computers, Parts of computer system, Memory devices, Input and output devices, Types of monitors, Types of printers, Number systems, Bits and bytes, Text codes and types of processors

**UNIT - 2**

**OPERATING SYSTEMS:** Types of operating systems, User interfaces, PC operating systems, Network operating systems, Types of software, Programming languages, Compiler and interpreter, Program control flow and algorithm.

**UNIT - 3**

**NETWORKS AND DATABASES:** Networking basics, Uses of network, Types of networks, Network hardware, Introduction to data bases and Database management systems.

**UNIT - 4**

**INTERNET AND WWW:** Internet's services, World wide web, Browser setups, Using search engine, Email and Other internet applications.

**UNIT - 5**

**CYBER SECURITY:** The need of computer security, Basic security concepts, Threats of users, Online spying tools, Threats to data, Cybercrime, Protective measures.

**TEXT BOOK:**

1. Peter Norton, "Introduction to Computers", 7th edition, Tata-McGrawHill, 2010.

**REFERENCEBOOKS:**

1. ITL Education Solution Limited, "Introduction to Computer Science", 2nd edition, Pearson Education, 2011.

2. Eric Maiwald, "Fundamentals of Network Security", 3rd edition, Tata-McGrawHill, 2004.

**Student Activity:**

- Prepare a report on various generations of computers and its peripherals.
- Disassembling and assembling of a personal computer system.
- Install the Linux operating system and other software required in a personal computer system.
- Connect the system to an Ethernet and configure the same.
- Prepare an MS Word Document.
- Prepare a spread sheet with various mathematical operations, charts and sorting etc.
- Make a report on power point presentation for the given topic.