**17CS1102 – INTRODUCTION TO COMPUTING**

**(Common to CE & ME)**

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| **Course Category** | Engineering Science | **Credits** | 4 |
| **Course Type** | Theory | **Lecture – Tutorial – Practical** | 3 - 0 - 2 |
| **Prerequisite** | Basic usage of Computer | **Sessional Evaluation** | 40 |
| **Semester End Exam Evaluation** | 60 |
| **Total Marks** | 100 |

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| **Course**  **Objectives** | 1. Understand the basics of computer fundamentals, identification of various components of computers and their need. 2. Creating awareness regarding various I/O devices. 3. Gaining knowledge about the working principle of CPU and its advancements. 4. Study of different storage media and operating system basics. 5. Getting fundamental ideas about core concepts of computer domains. | |
| **Course Outcomes** | CO1 | Identify physical components of a computer and their functionalities. |
| CO2 | Learn and recognize various interactive mechanisms through different devices. |
| CO3 | Strengthen regarding the structure and working principle of CPU. |
| CO4 | Understand the storage media and types of different operating system basics. |
| CO5 | Understand the basics of network and communication services. |
| CO6 | Gain the basic knowledge in core concepts of computers such as databases, programming languages, internet and security. |
| **Course Content** | **UNIT – I**  **INTRODUCTION TO COMPUTERS**: Overview and definitions – Computers for individual users – Desktop – Workstations – Notebook computers – Tablet and handheld computers – Smart phones – Computers for organizations – Network servers, Mainframes – Mini and super computers – Computers in society – Why are so important, home, education, small business, industry, government, healthcare, banking and communication.  **INSIDE THE COMPUTER:** Various parts of a computer system – Software, hardware, data, users, information processing cycle and essential computer hardware: Processor, memory, I/O and storage, software and major categories – System software and application software.  **UNIT – II**  **I/O DEVICES**: The Keyboard – Layout, Types of keys, Input from keyboard, The Mouse – Usage, variants of mouse – Devices for hand – Pens, touch screens, game controllers and optical devices – Bar code readers, image scanners and OCR monitors – Types, CRT monitors and flat panel monitors.  **DATA STORAGE**: Categories of storage devices: Magnetic: How data is stored and organized on disk, how OS access the data, diskettes, hard disks, removable high-capacity magnetic disks, tape drives and optical storage devices: CD-ROM, DVD-ROM, recordable optical technologies and solid-state storage devices: Flash memory, smart cards and solid state disks.  **UNIT – III**  **DATA PROCESSING**: How Computers represent data – Number systems, bits and bytes, text codes – How computers process data: The CPU, Machine cycles, Memory – Factors affecting processing speed: Registers, memory and computing power – The Computer’s internal clock – The BUS – Cache memory.  **MODERN CPU’S**: Look inside the processor, microcomputer processors: Intel, AMD, free scale and IBM processors, RISC and CISC processors – Parallel processing – MP, SMP and MPP.  **UNIT – IV**  **OS BASICS**: Types of operating systems: Real time operating systems, single-user/single – Tasking OS, and single user/multitasking OS and multi-user/multitasking OS – User interfaces: Graphical user interfaces – Command – Line interfaces and running programs – Sharing information.  **UNIT – V**  **NETWORKING BASICS**: The usage of network: Simultaneous access, shared peripheral devices, personal communications and easier data backup – Common types of networks: LANs and WANs – Hybrid networks: CANs, MANs, HANs, Intranets and Extranets – Network topologies: Bus, ring, star, mesh, tree and hybrid topologies.  **UNIT – VI**  **DATABASE MANAGEMENT SYSTEMS:** Databases and database management systems – The database – The DBMS – Working with database – Creating database tables.  **COMPUTER SECURITY**: Basic security concepts: Threats, degrees of harm and countermeasures, and threats to users – Identify theft – Loss of privacy – Online spying tools – Spam – Computer related injuries – Hardware threats: Power related threats, theft and vandalism and natural disasters. | |
| **Textbooks**  **&**  **Reference books** | **TEXTBOOKS:**   1. Peter Norton “Introduction to Computers”, McGraw Hill Publishers, 7th Edition 2011.   **REFERENCE BOOKS:**   1. Alex Leon and Mathews Leon “Fundamentals of Information Technology”, Vikas Publishers, 2nd Edition 1999. 2. David Cyganski & John A. Orr “Information Technology - Inside and Outside”, Pearson Education, 2002. 3. Marilyn Wolf “Computers as Components”, MK publications, 3rd Edition, 2014. | |
| **E-Resources** | 1. <https://nptel.ac.in/courses> 2. <https://freevideolectures.com/university/iitm> | |