

**Indian Institute of Engineering Science and Technology, Shibpur**  
**Department of Computer Science and Technology**

**Introduction to Computing (CS 1201)**

**Full paper: 2 – 1 – 0 (L – T – S),**

**Prerequisite: None**

**Credit: 2 (FM: 50)**

<b>Sl. No.</b>	<b>Module Name and topics</b>	<b>No. of Classes</b>
1.	<b>Introduction:</b> A brief history of the efforts in Automated computing: ABACUS, PASCAL to Babbage's Difference Engine. Electronic era and early developments.	2
2.	<b>Number system, codes:</b> Binary, Hex etc., Conversion, Addition, Subtraction, Character representation: ASCII, UNICODE	3
3.	<b>Logic operation and basic gates:</b> AND, OR, NOT, XOR, NAND and NOR Truth tables and use with respect to Half Adders and Full Adders etc.	3
4.	<b>Architecture of a typical PC:</b> Functional units: CPU, MEMORY, I/O, CACHE and BUS	2
5.	<b>Operating System and the programmer/user:</b> What is OS, How it helps developing programs, Basic file manipulation, Editing, Compilation and linking loading steps, Debugging, I/O redirection. Source file, object file, compiler etc.	3
6.	<b>Programming:</b> Writing simple programs, Basic data types and their use, Declaration and definition	3
7.	<b>Control Structures:</b> Loop and Decision statements, Structured type: Array of basic types, Use of array in simple problems. Special control structures: Switch, break, continue.	4
8.	<b>Functions:</b> Philosophy of modular development, User defined and library functions, Parameters, return type, call by value and call by reference. Storage class.	4
9.	<b>Bit manipulation:</b> Use of bit manipulation; difference between logical operation and bit operations	2
10.	<b>Pointers:</b> Definition and use. Array and pointers, Special use like memory allocation.	4
11.	<b>Structures and Files:</b> Combined data types, use in real life problems	4
12.	<b>Systems Programming:</b> Running debugger, creating library, finding execution time, linking/loading concepts, Stack and heaps.	6
	<b>Total</b>	<b>40</b>

**Note:** This course aims at providing the basic skills required by any UG student to use a computer as a problem solving tools as well as programming aspects through a standard procedure oriented language C. This is a foundation course for all subsequent specialized application of the computer in the context of the user writing an application on his/her own or taking help of a high level packaged s/w for specific use in engineering.