

**University of Kalyani**  
**Department of Computer Science & Engineering**  
**CBCS Course offered: Introduction to Computing**  
**2<sup>nd</sup> Semester**  
**Full Marks: 100 (80 + 20)**  
**Credits: 4**  
**Number of classes: 4 per week (Total - 40)**  
**Number of seats: 30**

**Detailed Syllabus**

Topic	Number of Lectures
History of Computer, Generation of Computer, Classification of Computers, The Shapes of Computers Today: Supercomputers. Mainframe Computers, Minicomputers, Workstations, Components of a computer, functional units, CPU, memory, types of memory, storage system, input and output devices, working principle of computers, data and information	2
Data representation, Binary & Allied number systems representation of signed and unsigned numbers. BCD, ASCII. Binary Arithmetic & logic gates	3
Introduction to Programming, Algorithms and Flow Chart: Generation of programming languages, steps involved in Problem Solving, Algorithm, Flow chat, Pseudo code	1
Basics of C: A Simple C program, Header files, data types and sizes, Constants, variables, token, identifiers, Operators: arithmetic, relational and logical operators, increment and decrement operators, conditional operator, bit-wise operators, assignment operators; expressions, L-value, rvalue, type conversions, conditional expressions, precedence and order of evaluation, data type conversion, mixed- mode operation, Managing Input and Output operation (formatted and unformatted)	4
Control Statements: Conditional control statement—if, if-else, nested-if, switch; Go-to statement; Looping—while, do-while, for, nested for; jumps in loops—break and continue statement	5
Arrays: Definition, one-dimensional arrays—declaration and initialization, two—dimensional arrays, multidimensional arrays, dynamic arrays	4
Strings: Introduction, Declaring and initializing strings, reading and writing strings, String Handling Function, Implementation of string functions, Arithmetic operation on strings, comparison of Strings	3
Functions: Function definition, arguments and parameters, categories of function, scope and extent, Storage classes, static and register variables, parameter passing mechanism, Inline function, nesting of function, recursion, passing arrays to function, passing strings to function, variable length argument list.	5
Pointers: Understanding memory address, declaring and initializing pointer variables, void pointer, null pointer, accessing a variable through pointer, array and pointer, pointer and string, pointer as function arguments, Pointer arithmetic, pointers to pointer, function returning pointer , pointers and structure, Dynamic memory allocation (Malloc, Calloc, releasing the used space, Realloc), Memory leak and memory corruption.	4
User defined data: Structure- defining, declaring, initializing; accessing structure members, processing of structure , array of structures, structures within structure, structure and function, type definition; Union—definition, declaration, accessing union members , initializing union Types	4
Pre-processor: Introduction, macro substitution, File Inclusion, Compiler control Directives	1
Files: Introduction, file declaration, opening and closing a file, working with text and binary files, I/O operations on file, error handling, random access to files	4
Total	<b>40</b>

**Suggested books**

1. V. Rajaraman, Fundamentals of Computers, Edition 6, PHI, 2014.
2. V. Rajaraman, Computer Basics and C Programming, PHI, August 2008.
3. E. Balagurusamy, Programming in ANSI C, Edition 7, McGrawHill, August 2016.