

## Syllabus for *Introduction to Computers and Programming* (2008)

Syllabus for Lab Exam	Week	Topic
Lab exam I	1.	a. Algorithm; Computation; Flowcharts and pseudo codes b. History of computer development; number systems – binary, octal, hexadecimal
	2.	a. Simple programs using default data types (int, float, STL strings, <i>etc</i> ); Ranges of various data types; simple operations (+, -, *, /, %); IF/ELSE IF/ELSE statement b. 1's and 2's compliments
	3.	a. Loops (FOR, WHILE, DO WHILE) b. maths library; bit manipulations
	4.	a. Functions; Passing by values and by references ('&'); Vectors and vector of vectors b. Program compilation
<i>Lab exam II</i>	5.	<i>a. Fundamentals of computer networking; ISO-OSI; TCP/IP; topology; LAN, WAN, client-server concept b. Iterators; Lists; Recursion; Type casting</i>
	6.	<i>a. Maps; Templates b. Basic STL Algorithms</i>
	7.	<i>a. Classes; Public, private and protected members b. Constructors and destructors</i>
	8.	<i>IO streams; File processing, sstreams and stringstream</i>
	9.	<i>a. Inheritance b. Exception handling</i>
Lab exam III	10.	a. Friend classes; Function and operator overloading b. Const vs Mutable
	11.	a. Macros and header files; Namespaces; Static b. Multifile compilation
	12.	a. Pointers; arrays; pointer arithmetic; linked lists b. Pointers to functions
	13.	a. Virtual functions; Run-Time Type Identification b. Pointer of pointers

### Books:

1. Digital Computer Electronics by Albert P. Malvino, Jerald A Brown; Tata McGraw-Hill
- 2. Thinking in C++, Volume 2: Practical Programming by Bruce Eckel, Chuck Allison; Prentice Hall**
3. Object Oriented Programming in C++ by E. Balaguruswamy; Tata McGraw-Hill
4. Unix Shell Programming by Yashavant Kanetkar; BPB Publications