INTERNATIONAL CENTER FOR APPLIED SCIENCE

(A constituent college of Manipal University, Manipal)

Manipal Karnataka 576 104

COURSE PLAN

Subject : Introduction to Computers & Programming

Semester & branch : I Sem, B.S.Engg.(CS)

Name of the faculty : Mr. Dasharathraj K Shetty,

Mrs. Arti Pawar

No of contact hours/week : 4

Assignment portion	
Assignment no.	**Topics**
1	**L1 – L16**
2	**L17 – L32**
Test portion	
Test no.	**Topics**
1	**L1 – L16**
2	**L17 – L32**
3	**L33 – L48**

Submitted by:
Mr. Dasharathraj K Shetty
Mrs. Aarathi Pawar

(Signature of the faculty)
Date: 04-08-2016

Approved by:
(Director, ICAS)
Date:

Lecture no.	Topic to be covered
1	**Introduction to Computers:** Block Diagram of Computer
2	Computer memories
3	Operating System Basics
4	**Algorithms and Flowcharts :** Definition of flowchart, Characteristics
5	Symbols used in flowcharts, simple examples
6	More examples of flowcharts
7	Algorithm Definition, Characteristics
8	Writing algorithms for variety of problems
9	Flowcharts implementation through RAPTOR tool
10	**Beginning with C++:** Applications of C++, sample program, C++ statements, structure of C++ program, creating the source file, compiling and linking
11	**Tokens and expressions:** Tokens, keywords, identifiers and constants
12	Basic data types, user defined data types, derived data types
13	symbolic constants, type compatibility, declaration of variables
14	dynamic initialization, reference variables
15	**Operators and Expressions** Operator precedence and associativity
16	arithmetic operators, relational operators, logical operators, assignment operators
17	increment and decrement operators, bitwise operators
18	conditional operator, comma operator, scope resolution operator, member de-referencing operators

19	memory management operators, manipulators, type cast operator, operator overloading
20	type conversions, implicit conversions, arithmetic expressions, evaluation of expressions, special assignment expressions
21	**Control Structures** Statements and blocks, simple if, if-else
22	Nested if statements, else-if ladder, switch–case statement
23	Looping constructs- entry controlled and exit controlled loops while, do-while & for loop constructs
24	break and continue statements, exit statement
25	Problem solving using above statements
26	More example programs using looping constructs
27	**Arrays & Strings** 1-D arrays- Declaration and Initialization, programs on array manipulation, bubble sort technique
28	Selection sort technique, linear and binary search techniques
29	2-D arrays-basics, simple programs on matrix manipulation
30	Strings-operation on strings, built-in string handling functions, programs on strings
31	**Functions:** Main function, function prototyping
32	call by reference, return by reference
33	inline functions, default arguments, const arguments,
34	function overloading
35	math library functions

36	**Principles of OOP:** Software crisis, evolution, POP, OOP
37	Basic concepts of OOP
38	Derived classes, single inheritance, multilevel,
39	multiple ,hierarchical inheritance
40	Benefits of OOP ,Object oriented languages
41	**Classes and Objects:** C structures and pointers, specifying a class, member functions
42	inline functions, private functions, nesting of member functions
43	arrays within a class, memory allocation
44	static members and functions, arrays of objects,
45	friend functions, const member functions
46	pointers to members, local classes
47	**Pointers** Pointer concepts, Pointers to variables
48	Simple programs, Basic operation on pointers.

Text book:

1. Object Oriented Programming in C++, Robert Lafore, 4th edition, Galgotia Publication, 2001
2. Computing Fundamentals and C Programming , E. Balaguruswamy, 1st Edition, Tata McGraw Hill Publication, 2012
3. Object Oriented Programming with C++, E. Balaguruswamy, 6th Edition, Tata McGraw Hill Publication, 2014

References:

1. C++ Primer Plus, Stephen Prata, 6th Edition, Addison Wesley Publication, 2011
2. The C++ Programming Language, Bjarne Stroustrup, 4th edition, Addison Wesley Publication, 2013