Banasthali Vidyapith - Faculty of Mathematics and Computing
Course Handout: B.Tech. (CS/IT) IV Semester Jan– May 2022

Date: 1-Jan-2022

Course Code: CS 214L **Course Name:** Object Oriented Programming Lab
Credit Points: 2 **Max. Marks : 100 (CA: 40+ ESA: 60)**
Course Instructors:
Dr.Manjeet Kumar, Assistant Professor, Computer Science-B.Tech IV Sem (CS-'A' & 'B' Batch)
Dr**.** Vaibhav Vyas, Associate Professor, Computer Science-B.Tech IV Sem (CS – 'C' + IT Batch)
Ms. Sneha Asopa, Assistant Professor, Computer Science- B.Tech IV Sem(IT –'B' Batch)

Learning Outcomes:

- After successful completion of the course students will be able to describe the features of C++ supporting object oriented programming.
- Explain the relative merits of C++ as an object oriented programming language.
- Describe how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism.
- Apply advanced features of C++ specifically stream I/O, templates and operator overloading
- Apply other features of the C++ language including templates, forms of casting, conversions, and file handling.

Suggested Readings:

R1. Balagurusamy, E. (2001). Object Oriented Programming with C++, 6e. Tata McGraw-Hill Education.
R2. Schildt, H. (2003). C++: The complete reference. McGraw-Hill.
R3. Lafore, R. (1997). Object-oriented programming in C++. Pearson Education.
R4. Stroustrup, B. (2000). The C++ programming language. Pearson Education India.
R5. Venugopal, K. R. (2013). Mastering C++. Tata McGraw-Hill Education.

Suggested E- Resources:

1. Stroustrup, B. (2000). The C++ programming language. Pearson Education India. http://www.stroustrup.com/C++.html
2. Programming in C++ https://nptel.ac.in/courses/106105151/

Continuous Assessment: 40 marks

Continuous assessment will be based on practical tests/ viva-voce/ any other components as decided by the instructor on regular basis.

End Semester Assessment: 60 marks

Sl. No.	Component	Duration	Date(s)	Syllabus	Marks
1.	Semester Examination		As per schedule	Laboratory No. 01 to 25	60

Laboratory-Wise Schedule: 2 Hours/ Laboratory

Laboratory Number	Topics to be Covered
1	Variables, Data Types and Sizes, Operators and Expressions, Constants – Literals
2 – 3	Control Flow, Statements and Block, if, if…else, Nested if…else, for, while, do…while, break, switch, continue, goto
4 – 6	Functions, Passing Data to Functions, Function Return Data Type, Library Functions, Return by Reference, Default Arguments, Inline Functions, Function Overloading
7 – 9	Classes, Objects, Accessing Class Members, Defining Member Functions, Outside Member Functions as Inline, Accessing Member Functions within the Class, Data Hiding, Friend Functions and Friend Classes
10 – 11	Constructors, Parameterized Constructors, Destructor, Constructor Overloading, Constructors with Default Arguments, Nameless Objects, Copy Constructor
12	Pointers to Objects, Array of Objects, this Pointer
13 – 14	Unary Operator Overloading, Binary Operator Overloading, Arithmetic Operators, Concatenation of Strings, Comparison Operators, Arithmetic Assignment Operators
15 – 17	Inheritance, Constructors and Destructors in Derived Classes, Overloaded Member Functions, Abstract Classes, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Multipath Inheritance and Virtual Base Classes, Hybrid Inheritance
18 – 19	Virtual Functions, Array of Pointers to Base Class Objects, Pure Virtual Functions, Abstract Classes, Virtual Destructors, Dynamic Binding Implementation
20 – 21	Generic Programming with Templates, Function Templates, Overloaded Function Templates, Class Templates
22 – 23	Streams, Predefined Console Streams, Unformatted I/ O Operations, Formatted Console I/ O Operations, Manipulators
24 – 25	File Handling, Sequential I/O Operations, Updating a File, Error Handling during File Operation

Dr. Manjeet Kumar, Dr. Vaibhav Vyas, Ms. Sneha Asopa
(Subject Teachers)