

<b>B. Sc. IT (HONS.) 2020: 3<sup>rd</sup> Semester</b>				
<b>Course</b>	<b>Credits-06</b>		<b>Total Marks- 90</b>	
	<b>Theory</b>	<b>Practical</b>	<b>Theory</b>	<b>Practical</b>
<b>BIT320C2: OOPS USING C++</b>	04	02	<b>60</b>	<b>30</b>

**THEORY: 4 CREDITS;**

**MAX. MARKS: 60**

**MIN. MARKS: 24**

**UNIT-I: Introduction to OOP and C++.**

Introduction to object oriented approach (OOA) and object oriented programming (OOP), concept of object and class.

**Features of OOP**-Encapsulation, Abstraction, Inheritance and Polymorphism. Advantages of OOP over structured programming.

Introduction to C++ with general basic features of operators and control structure (if, if-else, switch-case, while, do-while, for, etc.)

**UNIT-II: Classes, Objects and Functions.**

**Classes**-specifying class, defining member functions and member variables, scope resolution operator, access specifiers and accessing class members, friend class, static class members.

**Objects**-Dynamic allocation operators (New and Delete), arrays of objects, object as function argument and functions returning objects, object assignment.

**Functions**-Inline functions, friend functions. Default arguments, reference variables.

Constructors-parameterized, multiple constructors in a class, copy constructor, destructor. Function overloading, operator overloading (unary, binary).

**UNIT-III: Inheritance, Pointers and Polymorphism.**

**Inheritance**-Defining derived classes. Inheritance types-single, multilevel, multiple, hierarchical and hybrid inheritance. Virtual base classes.

**Pointers**-Pointer to objects, this pointer, pointer to derived class.

**Polymorphism**-Virtual functions, pure virtual functions, abstract classes.

**UNIT-IV: Templates and Exception Handling.**

**Templates**-Overview, Generic functions and generic classes.

**Exception handling**-Introduction, the keywords (try, catch and throw), multiple catch statements, catching all exceptions, rethrowing an exception.

**PRACTICAL: 2 CREDITS;**

**MAX. MARKS: 30**

**MIN. MARKS: 12**

**Note: The Practical Component shall be based on the Unit-I to Unit-IV**

**Books:**

- 1 "Object oriented programming with C++" by E Balaguruswamy
- 2 "The complete reference C++" by Herbert Schildt
- 3 "Object oriented programming in C++" by Robert Lafore