COURSE CODE	COURSE TITLE	L	T	P	C
1153CS103	OBJECT ORIENTED PROGRAMMING	3	0	0	3

Course Category: Allied Elective

A. Preamble:

To master all techniques of software development in the C++ Programming Language and demonstrate these techniques by the solution of a variety of problems spanning the breadth of the language including C++.

B. Prerequisite Courses:

Sl. No	Course Code	Course Name
1	1150CS201	Problem Solving using C

C. Related Courses:

Sl. No	Course Code	Course Name
		Nil

D. Course Educational Objectives:

Learners are exposed to

- Understand of the utility of object-oriented programming over procedure-oriented programming.
- Know the concept of code reusability to use third party code in the form of predefined classes to write their programs.
- Use the programs written by others and write the programs that can be used by others without exposing the source code, using package and interface concepts.
- Understand exception handling mechanism for handling exceptional situation that occur during run time.

E. Course Outcomes:

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's taxonomy)
CO1	Understand and design the solution to a problem using basic object-oriented programming concepts.	K2
CO2	Develop programs or applications using constructor and overloading concepts	K3
CO3	Implement programs using exceptions and file handling for providing programmed solutions to problems	K3
CO4	Demonstrate the use of virtual functions to implement polymorphism and inheritance.	K3
CO5	Implement programs using the features of C++ including templates.	K3

F. Correlation of COs with POs:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	**M**	**M**	**M**	**L**	**L**									**M**	
CO2	**M**	**M**	**L**	**L**	**L**				**L**					**M**	
CO3	**M**	**H**	**L**		**M**				**L**		**L**	**L**		**M**	**M**
CO4	**H**	**M**	**L**	**L**	**L**				**L**					**M**	
CO5	**M**	**M**	**L**	**L**	**H**						**L**	**L**		**H**	**L**

H- High; M-Medium; L-Low

G. Course Content:

UNIT I **9**

Object oriented programming concepts – objects – classes – methods and messages – abstraction and encapsulation – inheritance – abstract classes – polymorphism.

Introduction to C++ – classes – access specifiers – function and data members – default arguments – function overloading – friend functions – const and volatile functions - static members – Objects – pointers and objects – constant objects – nested classes – local classes

UNIT II **9**

Constructors – default constructor – Parameterized constructors – Constructor with dynamic allocation – copy constructor – destructors – operator overloading – overloading through friend functions – overloading the assignment operator – type conversion – explicit constructors

UNIT III **9**

Function and class templates - Exception handling – try-catch-throw paradigm – exception specification – terminate and unexpected functions – Uncaught exception.

UNIT IV **8**

Inheritance – public, private, and protected derivations – multiple inheritance - virtual base class – abstract class – composite objects Runtime polymorphism – virtual functions – pure virtual functions

UNIT V **10**

RTTI – typeid – dynamic casting – RTTI and templates – cross casting – down casting.

Streams and formatted I/O – I/O manipulators - file handling – random access – object serialization – namespaces - std namespace – ANSI String Objects – standard template library.

Total: 45 Hours

H. Learning Resources

i. Text Books:

1. B. Trivedi, “Programming with ANSI C++”, Oxford University Press, 2007.

ii. Reference Books

1. Ira Pohl, “Object Oriented Programming using C++”, Pearson Education, Second Edition Reprint 2004.

2. S. B. Lippman, Josee Lajoie, Barbara E. Moo, “C++ Primer”, Fourth Edition, Pearson Education, 2005.

3.B. Stroustrup, “The C++ Programming language”, Third edition, Pearson Education, 2004