Lovely Professional University, Punjab

Course Code	Course Title	Course Planner	Lectures	Tutorials	Practicals	Credits
CSE202	OBJECT ORIENTED PROGRAMMING	14335::Dr.Navneet Malik	3	0	2	4
Course Weightage	ATT: 5 CA: 30 MTT: 20 ETT: 45	**Exam Category: 13: Mid Term Exam: All MCQ – End Term Exam: MCQ + Subjective**				
Course Orientation	COMPETITIVE EXAMINATION (Higher Education), PLACEMENT EXAMINATION, SKILL ENHANCEMENT					

	TextBooks (T)		
Sr No	**Title**	**Author**	**Publisher Name**
T-1	OBJECT ORIENTED PROGRAMMING IN C++	ROBERT LAFORE	PEARSON
	Reference Books (R)		
Sr No	**Title**	**Author**	**Publisher Name**
R-1	PROGRAMMING WITH C++	D RAVICHANDRAN	MCGRAW HILL EDUCATION
R-2	OBJECT ORIENTED PROGRAMMING IN C++	E BALAGURUSAMY	MCGRAW HILL EDUCATION

Relevant Websites (RW)		
Sr No	**(Web address) (only if relevant to the course)**	**Salient Features**
RW-1	http://www.studytonight.com/cpp/	Free website where students can learn the basic concepts of programming and also basics and advanced topics of OOPS. Students can also give the practice tests in this interface.
RW-2	https://www.tutorialspoint.com/cplusplus/	Free web site to learn C++ programming for the beginners
RW-3	https://www.hackerrank.com/	Programming competitions and contests, programming community.
RW-4	codeforces.com	Programming competitions and contests, programming community.
RW-5	www.codechef.com/	CodeChef hosts Online Programming Competition, Programming Contest
RW-6	https://www.hackerearth.com/	HackerEarth is a network of top developers across the world. Developers participate in online coding challenges and hackathons, solve problems.
RW-7	http://www.dailyfreecode.com/Code/perform-array-operations-append-2646.aspx	Array operations
RW-8	http://www.yolinux.com/TUTORIALS/C++MemoryCorruptionAndMemoryLeaks.html	Memory Leak
RW-9	http://www.learncpp.com	learncpp.com is a totally free website devoted to teaching you to program in C++.
RW-10	http://cplus.about.com/	About C, C++ and C# brings the latest programming tutorials, programming challenges, C++ for beginners

Software/Equipments/Databases		
Sr No	**(S/E/D) (only if relevant to the course)**	**Salient Features**
SW-1	http://www.codeblocks.org/home	To download Code Blocks Compiler for the execution of C++ programs
SW-2	http://www.bloodshed.net/dev/devcpp.html	To download DEV- Cpp for the execution of C++ programs

Virtual Labs (VL)		
Sr No	**(VL) (only if relevant to the course)**	**Salient Features**
VL-1	http://sourceforge.net/projects/vle/	Students need to download the system and study the slightly complex programming environment
VL-2	http://iitkgp.vlab.co.in/?sub=38	It provides a suitable environment to improve and refine the effectiveness of scientific research and widening the use scarce equipments

LTP week distribution: (LTP Weeks)	
Weeks before MTE	7
Weeks After MTE	7
Spill Over (Lecture)	

Detailed Plan For Lectures

Week Number	Lecture Number	Broad Topic(Sub Topic)	Chapters/Sections of Text/reference books	Other Readings, Relevant Websites, Audio Visual Aids, software and Virtual Labs	Lecture Description	Learning Outcomes	Pedagogical Tool Demonstration/ Case Study / Images / animation / ppt etc. Planned	Live Examples
Week 1	Lecture 1	Concepts and Basics of C++ Programming(Differences between procedural and object oriented programming, Features of Input/output Streams)	T-1	RW-9	Prerequisites of C plus Plus. Delivery of lecture 0 and introduction to the course	Students will come to Know the difference between procedure and object oriented programming	Lecture, Live demonstrations	

Week 1	Lecture 2	Concepts and Basics of C++ Programming(Reading and writing data using cin and cout)	T-1	RW-9	Practice of programs using cin and cout.	Students will come to know about cin and cout statements	Lecture, Live demonstrations	
	Lecture 3	Concepts and Basics of C++ Programming(Creating classes, Class objects, Accessing class members)	T-1	RW-9	creating classes, class objects and accessing class members	The students will also know how to create classes and its objects.	Lecture, Live demonstrations ,Gamification tools	An example of car can be taken which is a class and a particular model of the car can be an object
	Lecture 4	Concepts and Basics of C++ Programming(Differences between Structures, Unions and Classes, Enumeration)	T-1 R-2	RW-9 RW-10	Description of structures, unions and classes, Enumeration	Students will learn as how to group multiple data as a single entity and the differences between them	Lecture, Live demonstrations , Gamification tools	A nursery having different variety of flowers can be considered as a class, structure
Week 1	Lecture 4	Concepts and Basics of C++ Programming(Inline and Non-inline member functions)	T-1 R-2	RW-9	To Understand and use concept of inline and non-inline member functions.	Students will learn the use of inline functions.	Lecture, Live demonstrations ,Gamification tools	
	Lecture 5	Concepts and Basics of C++ Programming(Static data members and static member functions)		RW-9	To Understand and use concept of static data members and static member Functions	Students will learn how to use static data members and static member functions	Lecture, Live demonstrations , Gamification tools and Dev C++	
Week 2	Lecture 6	Concepts and Basics of C++ Programming(Static data members and static member functions)	T-1	RW-9	Reserved for Practice of function	Students will learn how to use static data members and static member functions	Lecture, Live demonstrations , Gamification tools and Dev C++	

Week 2	Lecture 7	Functions (Functions with Default parameters/arguments)	T-1	RW-1 RW-9	How to use Functions with default parameters	Students will understand as how to use functions with default parameters	Lecture, Live demonstrations , Gamification tools	Bank account balance can be an example of a function which could take a parameter such as salary and rate of interest default to perform operations on it to calclulate interest
	Lecture 8	Functions and Input/output Streams(Inline Functions, Manipulators Functions)	T-1	RW-1 RW-9	Displaying output in various forms and using inline functions for faster execution	Students will understand as how to use functions with default parameters and understand cascading concepts	Lecture, Live demonstrations , Gamification tools	
	Lecture 9	Functions and Input/output Streams(Function overloading and Scope rules, Friend of a class (friend function and friend class))	T-1	RW-9	Lecture 9: Details about function overloading, local and global scope variables and friend function Lecture 10: Details about friend function and friend class	Students will understand the advantages of using function overloading, friend function and friend class	Lecture, Live demonstrations, Gamification tools and DevC++	A friend has access to your games and some of your possessions which can be used for friend function
Week 2	Lecture 10	Functions and Input/output Streams(Function overloading and Scope rules, Friend of a class (friend function and friend class))	T-1	RW-9	Lecture 9: Details about function overloading, local and global scope variables and friend function Lecture 10: Details about friend function and friend class	Students will understand the advantages of using function overloading, friend function and friend class	Lecture, Live demonstrations, Gamification tools and DevC++	A friend has access to your games and some of your possessions which can be used for friend function

Week 3	Lecture 11	Functions and Input/output Streams(Reference variables, Differences between Call by value, Call by address and call by reference, Recursion(Function, Member Function))	T-1	RW-9	Details about the differences in various function calls and recursion	Students will understand the differences between various function calls, and recursion	Lecture, Live demonstrations, Gamification tools,Dev C++	A record playing from the beginning to end can be used as an example of Recursion as function and member function of class.
Week 3	Lecture 12	Functions and Input/output Streams(Reference variables, Differences between Call by value, Call by address and call by reference, Recursion(Function, Member Function))	T-1	RW-9	Details about the differences in various function calls and recursion	Students will understand the differences between various function calls, and recursion	Lecture, Live demonstrations, Gamification tools,Dev C++	A record playing from the beginning to end can be used as an example of Recursion as function and member function of class.
Week 3	Lecture 13	Pointers, Reference Variables, Arrays and String Concepts(difference between pointer and reference variable,Void pointer, Pointer arithmetic, Pointer to pointer)	T-1	RW-2 RW-9 SW-2	Usage of reference variables and differences from pointers, void pointer and arithmetic operations on pointers, pointer to pointer	The students will learn about the various arithmetic operations on pointers and the types of pointers	Lecture, Live demonstrations, Dev C++	A street sign pointing to the location of a bus terminus could be an example of a pointer
	Lecture 14	Pointers, Reference Variables, Arrays and String Concepts(difference between pointer and reference variable, Void pointer, Pointer arithmetic, Pointer to pointer)	T-1	RW-2 RW-9 SW-2	Reserved for practice of reference variables, void pointer and pointer arithmetic	The students will learn about the various arithmetic operations on pointers and the types of pointers	Lecture, Live demonstrations, Dev C++	A street sign pointing to the location of a bus terminus could be an example of a pointer
	Lecture 15	Pointers, Reference Variables, Arrays and String Concepts(Possible problems with the use of pointers - Dangling pointer, Wild pointer, Null pointer assignment)	T-1 R-1	RW-8 SW-1	Various pointers and types of problems which may arise due to the use of pointers	The students will learn about the various pointers and problems associated with pointer use	Lecture, Live demonstrations	A street sign pointing to the location of a bus terminus could be an example of pointer
Week 4	Lecture 16	Pointers, Reference Variables, Arrays and String Concepts(Classes containing pointers, Pointer to objects, this pointer)	T-1 R-2	RW-1	Use of pointers to objects, classes having pointers as members and this pointer	Students will learn how to use pointers with objects of a class	Lecture, Live demonstrations	

Week 4	Lecture 17	Pointers, Reference Variables, Arrays and String Concepts(Classes containing pointers, Pointer to objects, this pointer)	T-1 R-2	RW-1	Use of pointers to objects, classes having pointers as members and this pointer	Students will learn how to use pointers with objects of a class	Lecture, Live demonstrations	
	Lecture 18	Pointers, Reference Variables, Arrays and String Concepts(Classes containing pointers, Pointer to objects, this pointer)	T-1 R-2	RW-1	Reserved for the practice of pointers with classes and this pointer.	Students will learn how to use pointers with objects of a class	Lecture, Live demonstrations	A street sign pointing to the location of a bus terminus could be an example of a pointer
Week 4	Lecture 19	Pointers, Reference Variables, Arrays and String Concepts(Pointer to a member, Array declaration and processing of multidimensional arrays(inside main and inside class))	T-1	RW-4 RW-5 RW-6 RW-7 RW-9 VL-2	Declaration and processing of multidimensional arrays and use of array of objects	Students will learn to use multidimensional arrays along with the creation of 1D and multidimensional array of objects	Dev C++, Pair programming	Rows of students all belonging to the same section can be used to explain a multidimensional array
	Lecture 20	Pointers, Reference Variables, Arrays and String Concepts(Pointer to a member, Array declaration and processing of multidimensional arrays(inside main and inside class))	T-1	RW-4 RW-5 RW-6 RW-7 RW-9 VL-2	Reserved for practice of multidimensional arrays and array of objects	Students will learn to use multidimensional arrays along with the creation of 1D and multidimensional array of objects	Dev C++, Pair programming	Rows of students all belonging to the same section can be used to explain a multidimensional array
Week 5	Lecture 21	Pointers, Reference Variables, Arrays and String Concepts(Array of objects, The Standard C++ string class-defining and assigning string objects)	T-1	RW-9	Using C++ string class, operations on strings	Students will learn to use the string class in C++ effectively	Lecture, Live demonstrations	The address of anyone's home contains a mix of characters, digits etc and is an example of string
Week 5	Lecture 22	Pointers, Reference Variables, Arrays and String Concepts(Member functions, Modifiers of string class)	T-1	RW-9	Using C++ string class, operations on strings, substrings of strings, concatenation, operators used with strings, modifiers, member functions	Students will learn to use the string class in C++ effectively	Lecture, Live demonstrations	The address of anyone's home contains a mix of characters, digits etc and is an example of string
	Lecture 23	Pointers, Reference Variables, Arrays and String Concepts(Member functions, Modifiers of string class)	T-1	RW-9	Reserved for the practice of the string class, members functions and modifiers of string class	Students will learn to use the string class in C++ effectively	Lecture, Live demonstrations	The address of anyone's home contains a mix of characters, digits etc and is an example of string

Week 5	Lecture 24	Constructors, Destructors and File Handling(Manager functions (constructors and destructor), Default constructor)	T-1	RW-9	Manager functions involving various types of constructors, their use and differences	Students will learn about the difference between various types of constructors and their use	Lecture, Live demonstrations	The way of assigning a value to a variable of built in data type can be used to describe constructors
		Constructors, Destructors and File Handling (Parameterized constructor, Copy constructor, Intializer Lists)	T-1	RW-9	Manager functions involving various types of constructors, their use and differences	Students will learn about the difference between various types of constructors and their use	Lecture, Live demonstrations	The way of assigning a value to a variable of built in data type can be used to describe constructors
Week 5	Lecture 25	Constructors, Destructors and File Handling (Constructor with default arguments, Destructors)	T-1	RW-9	Use of an initializer list, constructor with default arguments and destructors	Students will learn to use constructors and destructors in C++	Lecture, Live demonstrations	The stadium is cleaned by workers, this can be used as an example of destructors
Week 6	Lecture 26	Constructors, Destructors and File Handling (Parameterized constructor, Copy constructor, Intializer Lists)	T-1	RW-9	Reserved for the practice of various constructors and destructors	Students will learn to use constructors and destructors in C++	Lecture, Live demonstrations	The stadium is cleaned by workers, this can be used as an example of destructors
	Lecture 27	Data File operations (Opening and closing of files, Modes of file)	T-1	RW-9	Use of file handling in C++, opening and closing files, modes of opening files, reading and writing of files	Students will learn how to open the files, the various modes to open and how to read and write into files	Lecture, Live demonstrations	The file folder which is used to hold the various documents of a person can be used to explain the concept of file handling
		Data File operations(File stream functions, Reading/Writing of files)	T-1	RW-9	Use of file handling in C++, opening and closing files, modes of opening files, reading and writing of files	Students will learn how to open the files, the various modes to open and how to read and write into files	Lecture, Live demonstrations	The file folder which is used to hold the various documents of a person can be used to explain the concept of file handling
Week 6	Lecture 28	Data File operations(File stream functions, Reading/Writing of files)	T-1	RW-9	Reserved for the practice of file reading and writing	Students will learn how to open the files, the various modes to open and how to read and write into files	Lecture, Live demonstrations	The file folder which is used to hold the various documents of a person can be used to explain the concept of file handling
	Lecture 29				Online Assignment 1			

Week 6	Lecture 30	Data File operations (Sequential access and random access file processing, Binary file operations)	T-1 R-2	RW-9	Differences between sequential and random access	Students will learn the difference between sequential and random access and to use file handling in an object oriented program	Lecture, Live demonstrations	The file folder which is used to hold the various documents of a person can be used to explain the concept of file handling
Week 7	Lecture 31	Data File operations (Sequential access and random access file processing, Binary file operations)	T-1 R-2	RW-9	Reserved for the practice of file reading and writing	Students will learn the difference between sequential and random access and to use file handling in an object oriented program	Students will learn the difference between sequential and random access and to use file handling	The file folder which is used to hold the various documents of a person can be used to explain the concept of file handling
	Lecture 32	Data File operations(Classes and file operations, Structures and file operation)	T-1	RW-9	How to use file handling in an object oriented program and differences between Sequential access and random access	Students will learn the difference between sequential and random access and to use file handling in an object oriented program	Lecture, Live demonstrations, Dev C++, Pair programming	The file folder which is used to hold the various documents of a person can be used to explain the concept of file handling
	Lecture 33	Data File operations(Classes and file operations, Structures and file operation)	T-1	RW-9	How to use file handling in an object oriented program and differences between Sequential access and random access	Students will learn the difference between sequential and random access and to use file handling in an object oriented program	Lecture, Live demonstrations, Dev C++, Pair programming	The file folder which is used to hold the various documents of a person can be used to explain the concept of file handling
Week 7	Lecture 34	Data File operations(Classes and file operations, Structures and file operation)	T-1	RW-9	Reserved for practice of file handling	Students will learn the difference between sequential and random access and to use file handling in an object oriented program	Lecture, Live demonstrations, Dev C++, Pair programming	The file folder which is used to hold the various documents of a person can be used to explain the concept of file handling
		SPILL OVER						
Week 7	Lecture 35				Spill Over			
		MID-TERM						
Week 8	Lecture 36	Operator Overloading and Type Conversion(Operator Overloading (unary operator, binary operator overloading))	T-1	RW-1 RW-2 RW-9	Usage and program of overloading unary operators in object oriented programming	Students will learn to overload unary operators in an object oriented program	Lecture, Live demonstrations	Same television can be used with DVD player and a set top box. This example can be used to explain operator overloading

Week 8	Lecture 37	Operator Overloading and Type Conversion(Operator Overloading (unary operator, binary operator overloading))	T-1	RW-1 RW-2 RW-9	Usage and program of overloading binary operators in C++	Students will learn to overload binary operators in an object oriented program	Lecture, Live demonstrations	Same television can be used with DVD player and a set top box. This example can be used to explain operator overloading
Week 8	Lecture 38	Operator Overloading and Type Conversion(Operator Overloading (unary operator, binary operator overloading))	T-1	RW-1 RW-2 RW-9	Usage and program of overloading binary operators in C++	Students will learn to overload binary operators in an object oriented program	Lecture, Live demonstrations	Same television can be used with DVD player and a set top box. This example can be used to explain operator overloading
	Lecture 39	Operator Overloading and Type Conversion(Operator Overloading (unary operator, binary operator overloading))	T-1	RW-1 RW-2 RW-9	Reserved for the practice of operator overloading	Students will learn to overload operators in an object oriented programming	Lecture, Live demonstrations	Same television can be used with DVD player and a set top box. This example can be used to explain operator overloading
Week 8	Lecture 40	Operator Overloading and Type Conversion(Type conversions - basic type to class type, class type to basic type, class to class type)	T-1 R-1 R-2	RW-9	Conversion of a user defined data type to inbuilt data type	Students will learn to convert user defined data type into built in type	Lecture, Live demonstrations	Transferring water from one shape of container to another can be used as an example
Week 9	Lecture 41	Operator Overloading and Type Conversion(Type conversions - basic type to class type, class type to basic type, class to class type)	T-1 R-1 R-2	RW-9	Conversion of a built in data type to user defined data type	Students will learn to convert built in data type into user defined type	Lecture, Live demonstrations	Transferring water from one shape of container to another can be used as an example
	Lecture 42	Operator Overloading and Type Conversion(Type conversions - basic type to class type, class type to basic type, class to class type)	T-1 R-1 R-2	RW-9	Conversion of a user defined data type to another user defined data type	Students will learn to convert user defined data type into another user defined data type	Lecture, Live demonstrations	Transferring water from one shape of container to another can be used as an example

	Lecture 43				Online Assignment 2			
Week 9	Lecture 44	Inheritance(Inheritance Basics – derived class and base class)	T-1 R-1 R-2	RW-2	Inheritance importance and concept of base and derived class	Students will learn about the importance of inheritance and its types	Lecture, Live demonstrations, Dev C++, Pair programming	Passing of possessions from parents to children is an example of inheritance
Week 9	Lecture 44	Inheritance(Types (simple, multi-level, multiple and hierarchical))	T-1 R-1 R-2	RW-2	various Inheritance types(simple,multi-level, multiple and hierarchical)	Students will learn about the importance of inheritance and its types	Lecture, Live demonstrations, Dev C++, Pair programming	Passing of possessions from parents to children is an example of inheritance
	Lecture 45	Inheritance(Types (simple, multi-level, multiple and hierarchical))	T-1 R-1 R-2	RW-2	various Inheritance types(simple,multi-level, multiple and hierarchical)	Students will learn about the importance of inheritance and its types	Lecture, Live demonstrations, Dev C++, Pair programming	Passing of possessions from parents to children is an example of inheritance
Week 10	Lecture 46	Inheritance(Modes (private, protected, public inheritance))	T-1 R-1 R-2	RW-1 RW-2	Various types of inheriting modes such as private, public,protected	Student will learn various modes of inheritance	Lecture, Live demonstrations, Dev C++, Pair programming	A water body merging into a bigger water body can be an example
Week 10	Lecture 47	Inheritance(Modes (private, protected, public inheritance))	T-1 R-1 R-2	RW-1 RW-2	Reserved for practice	Student will learn various modes of inheritance	Lecture, Live demonstrations, Dev C++, Pair programming	A water body merging into a bigger water body can be an example

	Lecture 48	Inheritance(Overriding member functions)	T-1	RW-2	How to override member functions	Students will learn about overriding of member functions	Lecture, Live demonstrations, Dev C++, Pair programming	A student sent to attend another class with the same name as that of an existing students in the other class can be used as an example
Week 10	Lecture 49	Inheritance(Overriding member functions)	T-1	RW-2	Reserved for the practice of Overriding member functions	Students will learn about overriding of member functions	Lecture, Live demonstrations, Dev C++, Pair programming	A student sent to attend another class with the same name as that of an existing students in the other class can be used as an example
	Lecture 50	Inheritance(Order of execution of constructors and destructors)	T-1	RW-2	The execution order of constructors and destructors	Students will learn about the order of execution of constructors and destructors	Lecture, Live demonstrations, Pair programming	A student sent to attend another class with the same name as that of an existing students in the other class can be used as an example
Week 11	Lecture 51	Inheritance(Order of execution of constructors and destructors)	T-1	RW-2	Reserved for the practice of Order of execution of constructors and destructors	Students will learn about the order of execution of constructors and destructors	Lecture, Live demonstrations, Pair programming	A student sent to attend another class with the same name as that of an existing students in the other class can be used as an example
Week 11	Lecture 52	Inheritance(Resolving ambiguities in inheritance, Virtual base class)	T-1	RW-2 RW-9	Various ambiguities that may arise in inheritance and the virtual base class	Students will learn how to resolve various ambiguities in inheritance and the importance of virtual base class	Lecture, Live demonstrations, Pair programming	A grandchild having same birthday presents bought by grandparents and sent to the parents and finally passed on to the child

	Lecture 53	Inheritance(Resolving ambiguities in inheritance, Virtual base class)	T-1	RW-2 RW-9	Reserved for the practice of various ambiguities that may arise in inheritance and the virtual base class	Students will learn how to resolve various ambiguities in inheritance and the importance of virtual base class	Lecture, Live demonstrations, Pair programming	A grandchild having same birthday presents bought by grandparents and sent to the parents and finally passed on to the child
	Lecture 54	Dynamic Memory Management and Polymorphism(Dynamic memory allocation using new and delete operators)	T-1 R-1	RW-9	Allocation and deallocation of memory	Students will learn about allocating and deallocating memory	Lecture, Live demonstrations	A runner having an energy drink while running to replenish energy can be an example
Week 11	Lecture 55				Online Assignment 3			
Week 12	Lecture 56	Dynamic Memory Management and Polymorphism(Memory leak and allocation failures)	T-1	RW-8 RW-9	Various problems associated with dynamic memory allocation	Students will learn about allocating and deallocating memory and various problems which arise with it	Lecture, Live demonstrations, Dev C++, Pair programming	A runner having an energy drink while running to replenish energy can be an example
	Lecture 57	Dynamic Memory Management and Polymorphism(Memory leak and allocation failures)	T-1	RW-8 RW-9	Reserved for practice of Dynamic memory allocation using new and delete operators, Memory leak and allocation failures	Students will learn about allocating and deallocating memory and various problems which arise with it	Lecture, Live demonstrations, Dev C++, Pair programming	A runner having an energy drink while running to replenish energy can be an example
	Lecture 58	Dynamic Memory Management and Polymorphism(Virtual destructors, Compile and run time polymorphism, Virtual functions)		RW-9 VL-1	importance of virtual Destructors	Students will learn the importance of virtual destructors	Lecture, Live demonstrations, Dev C++, Pair programming	

	Lecture 59	Dynamic Memory Management and Polymorphism(Virtual destructors, Compile and run time polymorphism, Virtual functions)	T-1	RW-9 VL-1	An OOPS concept, difference between early and late binding, importance of virtual Functions	Students will learn the distinction between compile time and run time polymorphism and use of virtual functions	Lecture, Live demonstrations, Dev C++, Pair programming	
Week 12	Lecture 60	Dynamic Memory Management and Polymorphism(Pure virtual functions, Abstract class and concrete class, Self-Referential class, Early binding and late binding)	T-1 R-1 R-2	RW-1 RW-9	Difference between abstract and concrete class	Students will learn The abstract and concrete class	Lecture, Live demonstrations, Dev C++, Pair programming	
Week 13	Lecture 61	Dynamic Memory Management and Polymorphism(Pure virtual functions, Abstract class and concrete class, Self-Referential class, Early binding and late binding)	T-1 R-1 R-2	RW-1 RW-9	Use of self- referential class	Students will learn About self-referential class	Lecture, Live demonstrations, Dev C++, Pair programming	

Week 13	Lecture 62	Dynamic Memory Management and Polymorphism(Dynamic constructors)	T-1 R-1 R-2	RW-1 RW-9	Use of dynamic constructors	Students will learn the use of dynamic constructors	Lecture, Live demonstrations, Dev C++, Pair programming	
	Lecture 63	Exception Handling, Templates and Standard Template Library (STL) (Basics of exception handling, Exception handling mechanism)	T-1 R-1 R-2	RW-3 RW-9	Usage of the important concept of exception handling and its importance in handling erroneous conditions	Students will learn to deal with error conditions and handle them	Lecture, Live demonstrations	A fire drill to handle fires can be used as an example of exception handling
Week 13	Lecture 64	Exception Handling, Templates and Standard Template Library (STL) (Throwing mechanism, catching mechanism)	T-1 R-1 R-2	RW-2 RW-9	Usage of the important concept of exception handling and its importance in handling	Students will learn to deal with error conditions and handle them	Lecture, Live demonstrations	A fire drill to handle fires can be used as an example of exception handling
	Lecture 65	Exception Handling, Templates and Standard Template Library (STL) (Rethrowing an exception, Function template and class template)	T-1 R-1 R-2	RW-2 RW-9	Usage of function and class template	Students will learn to deal with function and class template	Lecture, Live demonstrations	An electronics kit which can be used to build a variety of devices can be used as an example of STL where a variety of functions are available
Week 14	Lecture 66	Exception Handling, Templates and Standard Template Library (STL) (Rethrowing an exception, Function template and class template)	T-1 R-1 R-2	RW-2 RW-9	Reserved for practice of Basics of exception Handling mechanism, Throwing mechanism, Catching mechanism, Rethrowing AnException	Students will learn to deal with error conditions and handle them	Lecture, Live demonstrations	
Week 14	Lecture 67	Exception Handling, Templates and Standard Template Library (STL) (Class template with inheritance(single level), Introduction to STL- Containers, Algorithms and iterators, Container - Vector and List)	T-1 R-2	RW-1 RW-9	Learning about inheritance in template	Students will learn about the concept of class templates with inheritance	Lecture, Live demonstrations, Dev C++, pair programming	An electronics kit which can be used to build a variety of devices can be used as an example of STL where a variety of functions are available

	Lecture 68	Exception Handling, Templates and Standard Template Library (STL) (Class template with inheritance, Introduction to STL- Containers, Algorithms and iterators, Container - Vector and List)	T-1 R-2	RW-1 RW-9	Introduction to STL- Containers, Algorithms and Iterators, Container–Vector and List	Students will learn about the concept STL- Containers, Algorithms and iterators, Container - Vector and List)	Lecture, Live demonstrations, Dev C++, pair programming	An electronics kit which can be used to build a variety of devices can be used as an example of STL where a variety of functions are available
	Lecture 69	Exception Handling, Templates and Standard Template Library (STL) (Class template with inheritance, Introduction to STL- Containers, Algorithms and iterators, Container - Vector and List)	T-1 R-2	RW-1 RW-9	Introduction to STL- Containers, Algorithms and Iterators, Container–Vector and List	Students will learn about the concept STL- Containers, Algorithms and iterators, Container - Vector and List)	Lecture, Live demonstrations, Dev C++, pair programming	An electronics kit which can be used to build a variety of devices can be used as an example of STL where a variety of functions are available
Week 14	Lecture 70			Spill Over				

Scheme for CA:

CA Category of this Course Code is:A0203 (2 best out of 3)

Component	Weightage (%)
Online Assignment	50
Online Assignment	50
Online Assignment	50

Details of Academic Task(s)

Academic Task	Objective	Detail of Academic Task	Nature of Academic Task (group/individuals)	Academic Task Mode	Marks	Allottment / submission Week
Online Assignment 1	To ensure understanding of the concepts and check the student's progress and his performance on individual basis	The assignment will cover the topics completed in week 1 till week 5	Individual	Online	30	3 / 6
Online Assignment 2	To ensure understanding of the concepts and check the student's progress and his performance on individual basis	The assignment will cover the topics completed in week 6 till week 8	Individual	Online	30	7 / 9
Online Assignment 3	To ensure understanding of the concepts and check the student's progress and his performance on individual basis	The assignment will cover the topics completed in week 9 till week 11	Individual	Online	30	10 / 11