SIR C.R.REDDY COLLEGE OF ENGINEERING, ELURU

DEPARTMENT OF INFORMATION TECHNOLOGY

LESSON PLAN

SUBJECT: IT 2.1.3 OBJECT ORIENTED PROGRAMMING

CLASS: 2/4 B.Tech., I SEMESTER, A.Y.2017-18

INSTRUCTOR: E B K MANASH

Sir C R Reddy college of Engineering
DEPT. OF INFORMATION TECHNOLOGY

PROGRAMME : B.Tech
SEMESTER : II -I Semester
Academic YEAR: 2017-18

Course: IT 2.1.3 **Object oriented programming**

Instructor: E B K MANASH

Course Contents

Category of Course	Course Title	Course Code	Credits- 4 C	Theory Paper
Departmental Elective - IT 2.1.3	OBJECT ORIENTED PROGRAMMING	IT 2.1.3	L-3 T-1	Max.Marks-70 Duration-3hrs.

Course objectives:

1. To get acquainted with the concepts of object-oriented programming.
2. To get a clear understanding of class , objects and constructor concepts
3. To get acquired with overloading concept.
4. To familiar with exception handling and inheritance concepts.
5. To get understand templates concepts
6. This course also covers basic concepts streams and UML Diagrams

Students who have successfully completed this course will have full understanding of the following concepts

Course Outcomes for OBJECT ORIENTED PROGRAMMING :

CO1: Able to understand and differentiate between structure oriented programming and object Oriented programming, various UML Diagrams and Basics of OOP .

CO2: Ability to apply Basic concepts of C++ and inheritance in programming.

CO3: Able to demonstrate polymorphism and streams .

CO4: Able to understand to choose file , templates and exception in programs

ONLINE REFERENCES:

1 https://www.tutorialspoint.com/cplusplus/

2 http://www.geeksforgeeks.org/c-plus-plus/

3 http://www.cplusplus.com/doc/tutorial/

Prerequisite : c language, programming practices

Internal Assessment Details:

Attendance: 5 Marks
Internal Test 1& 2: 15 Marks
Assignment-1: 5 Marks
Assignment-2: 5 Marks

Total: 30 Marks

IT2.1.3 OBJECT ORIENTED PROGRAMMING Credits:4

Instruction: 3 Periods & 1 Tut /week Sessional Marks: 30

University-Exam : 3 Hours Univ-Exam Marks:70

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1. **Basic Concepts Of OOP:** Procedural Paradigms, Object Oriented Paradigm, OOP Principles and Terminology, OOP benefits , Procedure and Object Oriented programming languages, advantages and disadvantages . Introduction to U.M.L : Description of various U.M.L. Diagrams with examples.
2. Introduction to C++ : Basic Structure C++ Program , variable and Constants, Symbolic Constants , basic data types and derived data type , variable declaration , dynamic initialization, type modifiers, type casting, i/o statements in C++, operators and example programs**,** Control

Structures- Programs using all control structures and statements, Functions: Function Prototypes, Function Components, Returning values from functions, actual and formal arguments, parameter passing methods, Inline functions,
3. Classes and Objects: Introduction to class, class definition, class specification, Member functions, data members, access specifiers, scope resolution operator, Object definition and creation, array of objects, pointers, Pointers to objects, this pointer, dynamic allocation operator, friend functions, const and volatile functions, static members, nested classes, local classes,

4. Constructors and destructors: Definition of constructor and destructor, default constructor, parameterized constructor, copy constructor, constructor with dynamic allocation, explicit constructor,
Inheritance: Definition, base class, derived class, using access specifiers in inheritance, Types of Inheritance, protected data with private inheritance, constructor in derived and base class, abstract classes,
5. **Virtual functions and Polymorphism:** Function overloading, arrays and strings, Operator overloading through unary and binary operator, Friend functions, Assignment operator, Stream operator overloading and type conversion; Virtual functions, Pure Virtual function, Dynamic polymorphism, Virtual destructor, Virtual base class, Dynamic casting, Cross casting, Down casting, Program development.

6. **Streams and Files in C++:** Stream Classes, Formatted and unformatted data, manipulators, user defined manipulators, file streams, file pointer manipulation; file open and close, file handling, random access, object serialization, name spaces, std namespaces, ANSI string objects and standard template library.

7. **Templates, Exception handling:** Class templates, Function templates, Member function templates, Exception handling - try-catch-throw paradigm, exception specification, terminate and un expected functions- uncaught exception, exception handling mechanism, multiple catch, nested try, Rethrowing the exceptions

Text Books:
1. Object Oriented Programming through C++ by Robat Laphore.

Reference Books:
1. Object Oriented Programming in C++: N. Barkakati, PHI

2. Object oriented Programming using C++: E. Balagurusamy, PHI.

3. The Complete reference in C++ by Herbert Shieldt, TMH

4. The C++ Programming Language by B. Stroustrup, Pearson Education

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE SCHEDULE

The schedule for the whole course/subject is:

Unit No	Description of the Chapter	Description of the Topics	Total no of periods (L+T)
1	**Basic Concepts Of OOP and UML**	Procedural Paradigms, Object Oriented Paradigm, OOP Principles and Terminology, OOP benefits , Procedure and Object Oriented programming languages, advantages and disadvantages, various U.M.L. Diagrams	5+1
2	**Introduction to C++**	Basic Structure C++ Program , variable and Constants, , basic data types and derived data type , variable declaration , dynamic initialization, type modifiers, type casting, i/o statements in C++, operators and example programs**,** Control Structures, Functions, Inline functions,	10+2

3	**Classes and Objects**	Introduction to class, class definition, class specification, Member functions, data members, access specifiers, scope resolution operator, Object definition and creation, array of objects, pointers, Pointers to objects, this pointer, dynamic allocation operator, friend functions, const and volatile functions, static members, nested classes, local classes,	10+2
4	**Constructors, destructors, Inheritance**	Definition of constructor and destructor, default constructor, parameterized constructor, copy constructor, constructor with dynamic allocation, explicit constructor, **Inheritance:** Definition, base class, derived class, using access specifiers in inheritance, Types of Inheritance, protected data with private inheritance, constructor in derived and base class, abstract classes,	10+2
5	**Virtual functions and Polymorphism**	Function overloading, arrays and strings, Operator overloading through unary and binary operator, Friend functions, Assignment operator, Stream operator overloading and type conversion; Virtual functions, Pure Virtual function, Dynamic polymorphism, Virtual destructor, Virtual base class, Dynamic casting, Cross casting, Down casting, Program development	10+2
6.	**Streams and Files in C++**	Stream Classes, Formatted and unformatted data, manipulators, user defined manipulators, file streams, file pointer manipulation; file open and close, file handling, random access, object serialization, name spaces, std namespaces, ANSI string objects and standard template library	10+2
7.	**Templates,**	Class templates, Function templates, Member function templates, Exception handling - try-catch-throw paradigm,	10+2

	Exception handling	exception specification, terminate and un expected functions- uncaught exception, exception handling mechanism, multiple catch, nested try, Rethrowing the exceptions	

Total no of instructional periods available for the course : 80 periods

Total no of estimated periods : 78 periods

Signature of the H.O.D **Signature of the Faculty**

Date:

	LECTURE PLAN
DEPARTMET	INFORMATION TECHNOLOGY
NAME OF LECTURER	E B K MANASH

Sl.No	Topics to be covered	No. of Lecture hours	Teaching method	Program Outcomes
1	Introduction to c	1	BB	a,c
2	Data types	1	BB	a,c
3	Control structures	1	BB	a,b,c
4	Array and structures	1	BB	a,b,c
5	Procedure oriented paradism	1	BB	b,c,d
6	Oop	1	BB	b,c,d
7	Concepts of oop	1	BB	b,c,d
8	Benefits of oop	1	PPT with LCD	b,c,d
9	Indrocution to c++	1	BB	b,c,d
10	I/O streams	1	BB	b,c,d
11	Oop concepts	1	BB	b,c,d,e
12	Difference between pop and oop	1	BB	b,c,d,e
13	Basic datatypes.	1	BB	b,c,d,e
14	Userdafined and build in functions	1	BB	b,c,d,e
15	Structure of c++	1	BB	b,c,d,e
16	Reference variable and call by value and	1	BB	b,c,d,e

	reference			
17	Operators in c++	1	PPT with LCD	b,c,d,e
18	Memory management operator	1	BB	b,c,d,e
19	Manipulators	1	BB	b,c,d,e
20	Revision	1	BB	b,c,d,e
21	Functions	1	BB	b,c,d,e
22	Inline function	1		b,c,d,e
23	Class	1	BB	b,c,d,e
24	Access specifiers	1	BB	b,c,d,e
25	Member functions	1	BB	b,c,d,e
26	Pointers	1	BB	b,c,d,e
27	Pointer to object	1	BB	b,c,d,e
28	Array of objects	1	PPT with LCD	b,c,d,e
29	Referencing object	1		b,c,d,e
30	This, local, nested classes	1	BB	b,c,d,e
31	Constructors	1	BB	b,c,d,e
32	Revision and tutorial	1	BB	b,c,d,e
33	Default and parameterized constructor	1	BB	b,c,d,e
34	Copy constructors	1	PPT with LCD	b,c,d,e
35	Destructor	1	BB	b,c,d,e

36	Revision	1	BB	b,c,d,e
37	Mid-1	1		
38	Dynamic allocation in constructor	1	BB	b,c,d,e
39	Object counting	1	BB	b,c,d,e
40	Public private and protected constructor	1	BB	b,c,d,e
41	Single inheritance	1	BB	b,c,d,e
42	Multiple inheritance	1	BB	b,c,d,e
43	Multi level inheritance	1	BB	b,c,d,e
44	Hierarchical inheritance	1	BB	b,c,d,e
45	Constructor in Inheritance	1	BB	b,c,d,e
46	Abstract class	1	BB	b,c,d,e
47	Pure virtual function. unary operator overloading	1	BB	b,c,d,e
48	Test	1		
49	Binary operator overloading	1	BB	b,c,d,e
50	With friend function overloading	1	BB	b,c,d,e
51	Assignment operator overloading	1	BB	b,c,d,e
52	Stream operator overloading	1	BB	b,c,d,e
53	Type constructor	1	PPT with LCD	b,c,d,e

54	Dynamic polymorphism	1	BB	b,c,d,e
55	Type conversion	1	BB	b,c,d,e
56	Dynamic polymorphism	1	BB	b,c,d,e
57	Virtual destructor	1	BB	b,c,d,e
58	Dynamic counting	1	BB	b,c,d,e
59	Virtual destructor	1	BB	b,c,d,e
60	Class , function template	1	BB	b,c,d,e
61	Member function template, exception handling	1	BB	b,c,d,e
62	Exception mechanism	1	BB	b,c,d,e
63	Uncaught exceptions, multiple catch blocks	1	BB	b,c,d,e
64	Nested try, re-throwing	1	BB	b,c,d,e
65	Exam	1		
66	Stream classes, formatted and un formatted I/O	1	BB	b,c,d,e
67	File streams, serialization	1	BB	b,c,d,e
68	Namespaces	1	BB	b,c,d,e
69	ASCII String objects	1	BB	b,c,d,e
	Total classes	**69**		

Unit wise questions (Short Answer Questions and essay)

Object Oriented Programming

Unit Wise Question Bank

Unit I

Short Answer Questions Answer Questions

1. what are advantages of an object oriented paradism?

2what is the difference between object oriented and procedural paradism?

3.Mention different types of uml diagrams?

Long Answer Questions

1. explain varies diagrams in uml?

2 Short Answer Questions notes on

a)class diagram

b)state chart diagram?

3. Short Answer Questions notes on

a. sequence diagrams

b. activity diagram

c)State chart diagram.

4. explain significance and difference between

a)component and deployment diagrams

b)sequence and collaboration diagram

5. write structure of class diagram?

6.explain oops concepts.?+1 and benifits?

7.explain hybrid object oriented methods?

UNIT II

Short Answer Questions

1 What is generic pointer?

2.what is reference variable?

3.for 2d array int a[2][2], which element is represented by*(a+1)

4 what is new and delete operator?

5.what are default arguments? Explain ?

Long Answer Questions

1. write syntax for c++ do while statement with example?

2explain pre-processor directives ?

3. write structure of c++ program and write program for arranging given names in ascending order?4. explain scope of variable in c++?

4 2.define string class to represent string:

a)to compare two strings and

B)to concatenate two strings (without using pre defined functions)

UNIT III

Short Answer Questions

1.what is abstract class?+1

2.what is protected access Specifies?

3what is the significance of access specifies in class?

4.list out manipulators in c++?

5what are different types of visibility modes for data members ?

6.explain static member with an example?

Long Answer Questions

1. write a c++ program to reverse a string using recursion?

2discuss importance of abstract class with example?

3.explain class and object and give the structure of c++ program?

4 check whether the number is palindrome not program in C++?

5.what are different types of access controls? explain with example?

6.what is constructor? explain constructor overloading with suitable example?

7 what is an inline function ? explain syntax?

8 what is friend function? explain with examples the need for a friend function?+

UNIT IV

Short Answer Questions

1.what is Pure virtual function?

2write a declarator for a pure virtual function called purevar() that returns type void and takes one argument of type int?

3 what is an inline function ? explain syntax?

4.define pure virtual function and copy constructor?

5 what do you mean by multiple inheritance and hybrid inheritance? give example for each?

6 what is copy constructor?and virtual function?

7.what is generalization?

Long Answer Questions

1 consider two classes animal and cow and explain inheritance concept with help of them.

2. explain following

a) c++ I/O standard functions?

b)Formatted I/O

3)explain multiple inheritance with example?

4) explain how constructors are handled in multiple inheritance?

5)what are virtual functions? explain with example?

6)how a derived class passes the arguments to base class constructors aLong Answer Questions with example?

7. explain different types of inheritances in c++?+1

8.what is friend function? explain with examples the need for a friend function?+1

9. explain IO facilities in c++ differ from other language?

10) explain in details of pure virtual function?

11. explain about virtual constructor and virtual destructors ?

12 write c++ program to append one file to another file?

13. explain formatted console IO operation with examples?

14. Discuss importance of abstract class with example?

UNIT V

Short Answer Questions

1.What is function overloading?+1

2. what is friend function?

Long Answer Questions

1 define a class Matrix and overload the operators to add , subtract and multiply two matrix?

2 how to implement runtime polymorphism ? Explain by using example?

3.explain about file handling in c++?

4.write c++ program to addintion subtraction and multiplication over two given numbers?

5. what are rules for operator overloading ? overload new and delete operator?

6. 7.write a c++ program to demonstrate unary operator overloading?

8. explain compile time and runtime polymorphism with example?

9. What is function overloading and explain with example?

UNIT VI

Short Answer Questions

1.define class template? example?

Long Answer Questions

1.what are friend function?why it is required ? explain with help of a suitable example?

2.what is static data member? give a example?

3.what is difference between static binding and runtime binding explain with example?

4. what is template? list merits and demerits of templates?

5.write c++ program to create a templete function for bubble sort and demonstrate the sorting of integers?

6.explain generic classes using macros.?

7.what are advantages of template?

UNIT VII

Short Answer Questions

1. overview of grady booch aproach?

2 what is exception ? what is throwable instance?

Long Answer Questions

1) explain error handling and Exception handling in c++?

2.explain exception handling in c++?+1 and benefits?

2015 paper

Short Answer Questions

1) what is type casting in c++

2) what is dynamic allocation

3) what is virtual base class

4) what is macros

5) what is state chart diagram

6) what is virtual destructors

Long Answer Questions

1) basic features of object orientation?

2) differences between oop and pop with example program

3)a)merits and demerits of runtime binding over compilation time binding?

b)explain about function template?

4 A)Short Answer Questions notes on different types of constructor and destructor?

B)explain varies access specifiers with examples?

5A)explain generic classes using macros?

B)benefits of exception handling?how to handle exception in c++?

6A)explain about multiple inheritance with suitable example containing constructor in it?

B)explain function call through a pointer ? explain virtual functions?

7A)explain exception handling mechanism?

B)differences between sequence and collaboration diagram and sequence diagrams?

8)Short Answer Questions notes on

A) file manipulation functions

B) component and deployment diagrams