



Department of Information Technology		LP: IT18201
		Rev. No: 00
B.E/B.Tech : IT	Regulation: R2018	Date: 21/01/19
PG Specialisation : _____		
Sub. Code / Sub. Name : IT18201 OOPS USING C++ AND PYTHON		
Unit : I		

Unit Syllabus:

C++ Programming features - Data Abstraction - Encapsulation - Class -Object - Constructors – Static members – Constant members – Member functions – Pointers – References - Role of this pointer – String Handling.

Objective:

To familiarize with the C++ concepts of abstraction, encapsulation, constructor, static and constant members ,member functions.

Session No *	Topics to be covered	Ref	Teaching Aids
1	C++ Programming features - Data Abstraction - Encapsulation	1–Ch.2; Pg.21-43 3–Ch.3; Pg.73-77	BB/LCD
2	Class - object	1-Ch.10; Pg.223-257 1-Ch.1; Pg.313-319 3–Ch.10; Pg.313-328	BB/LCD
3	Constructors	1-Ch.10; Pg.226-228 3–Ch.11; Pg.364-385	BB/LCD
4	Static members – constant members	1-Ch.10; Pg.228-230 3–Ch.10; Pg.354-357	BB/LCD
5,6	Member functions Friend function and Friend Class	1-Ch.10;Pg. 224-225, 238-240 3–Ch.3; Pg.84-86	BB/LCD
7	Pointers	1-Ch.5; Pg.87-88 3–Ch.5; Pg.268-285	BB/LCD
8	References- Role of this pointer	1-Ch.5; Pg.97-100	BB/LCD
9	String handling	1-Ch.7; Pg.143-147 1-Ch.3; Pg.48-49, 579-601 3–Ch.6; Pg.183-186	BB/LCD

Content beyond syllabus covered (if any):

Basic C++ Programs to understand the fundamentals of OOP
Friend Function and Friend Class

* Session duration: 50 minutes



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Unit : II

Unit Syllabus :

Dynamic memory allocation - Nested classes - Polymorphism – Compile time and Run time polymorphisms – Function overloading – Operator overloading - Inheritance – Virtual Functions - Abstract class.

Objective:

To familiarize with the C++ concepts of polymorphism, overloading and Inheritance.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Dynamic memory allocation	1-Ch.6; Pg.127-130	BB/LCD
11	Nested classes	1-Ch.11; Pg.293	BB/LCD
12	Polymorphism–compile time	1-Ch.12;Pg. 312, 3–Ch.3; Pg.84-86	BB/LCD
13	Run time polymorphisms	1-Ch.13;Pg.347	BB/LCD
14	Function overloading	1-Ch.7; Pg.149-153 3–Ch.7; Pg.214-218	BB/LCD
15	Operator overloading	1-Ch.11; Pg.261-297 3–Ch 13.; Pg.430-497	BB/LCD
16	Inheritance	1-Ch.2;Pg.38-40, 1-Ch.15;Pg.390-402 3–Ch.14; Pg.499-524	BB/LCD
17	Virtual functions	1-Ch.2;Pg.36-37 3–Ch.15; Pg.572-594	BB/LCD
18	Abstract class	1-Ch.12; Pg. 313-314	BB/LCD
Content beyond syllabus covered (if any):			

* Session duration: 50 mins



Sub. Code / Sub. Name: IT18201 OOPS USING C++ AND PYTHON

Unit : III

Unit Syllabus :

Generic Programming - Function template - Class template - Exception handling - Standard template libraries – containers – iterators – function adaptors – allocators - File handling concepts.

Objective:

To enhance the students' knowledge about the advanced features of C++.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Generic Programming	1-Ch.2; Pg.40-42 3-Ch.16; Pg.596-628	BB/LCD
20	Function template	3-Ch.16; Pg.596-604, 610-614	BB/LCD
21	Class template	1-Ch.13; Pg.327-352	BB/LCD
22	Exception handling	1-Ch.14; Pg. 355-386 3-Ch.19; Pg.703-719	BB/LCD
23	Standard libraries	1-Ch.3; Pg. 45-64	BB/ LCD
24	STL – containers – iterators	1-Ch.16;Pg.441-442, 1-Ch.19;Pg.550-561	BB/LCD
25	Function adaptors	1-Ch.18; Pg. 520-522	BB/LCD
26	Allocators- Parameterizing the class	1-Ch.19; Pg.567-577	BB/LCD
27	File handling concepts.	1-Ch.21; Pg.637-641	BB/LCD
Content beyond syllabus covered (if any):			

* Session duration: 50 mins



Sub. Code / Sub. Name: IT18201 OOPS USING C++ AND PYTHON

Unit : IV

Unit Syllabus :

Creating python classes, modules and packages, basic inheritance and multiple inheritance, Managing objects.

Objective:

Learn to use python classes, packages , and different types of inheritance.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Creating python classes-Adding attributes, Making it do something, Initializing object	2- Ch 2; pg 33-43	LCD/BB
29	Class Method and self arguments, The _init_()method, del() method	4- Ch 9; pg 402-406	LCD/BB
30	Public and private data members, Calling a class method from another class method.	4- Ch 9; pg 408-410	LCD/BB
31	Modules – The from import statement, Name of the module, The python module, Modules and namespaces.	4- Ch 5; pg 217-225	LCD/BB
32	Packages	4- Ch 5; pg 225-226	LCD/BB
33	Basic inheritance – Extending Built ins, Overriding and super.	4- Ch 10; pg 436-441	LCD/BB
34	Multiple inheritance	2- Ch 3; pg 68-73 4- Ch 7; pg 441-442	LCD/BB
35	Managing objects – Inheritance Based Solution	2- Ch 5; pg 137-144 4- Ch ; pg -	LCD/BB
36	Composition based solution	2- Ch 5; pg 145-147	LCD/BB
Content beyond syllabus covered (if any):			

* Session duration: 50 mins



Sub. Code / Sub. Name: IT18201 OOPS USING C++ AND PYTHON

Unit : V

Unit Syllabus :

Tuples, Dictionaries, List, Sets, Built-in functions, Design patterns-Decorator, Observer, Strategy, State, Singleton, Template .

Objective:

Learn to use tuples, Dictionaries, List, Sets, Built-in functions, Design patterns-Decorator, Observer, Strategy, State, Singleton, Template using python.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Tuples – Create , access,update, delete elements in tuple, basic tuple operations, Nested tuples	2- Ch 6; pg 159-162 4- Ch 8; pg 346-352	LCD/BB
38	Dictionaries – Create, access, modify,delete.sort items in a dictionary.Nested dictionary	2- Ch 6; pg 162-168 4 - Ch 8;pg 366-374	LCD/BB
39	List – Access,update values in a list, List methods, Nested list, cloning list, Basic list operations, looping in list	4-Ch 8;pg 322-335	LCD/BB
40	Sets – Creating a set	4-Ch 8;pg 359-366	LCD/BB
41	Built-in functions	2-Ch 7;pg 191-196	LCD/BB
42	Design patterns	2-Ch 8;pg 227-229	LCD/BB
43	Decorator, Observer	2- Ch 8;pg 229-235	LCD/BB
44	Strategy, State	2-Ch 8;pg 237-247	LCD/BB
45	Singleton, Template	2-Ch 8;pg 247-255	LCD/BB
Content beyond syllabus covered (if any):			

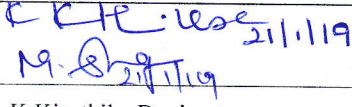
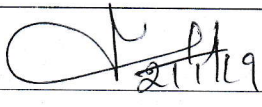
* Session duration: 50 mins



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REFERENCES:

1. Bjarne Stroustrup, "The C++ Programming Language", 4th Edition, Addison-Wesley Professional, 2013.
2. Dusty Philips Python 3 Object-oriented Programming - Second Edition 2015, packt publishers.
3. KR.Venugopal & Rajkumar Buyya "Mastering C++", second edition 2013.
4. Reema Thareja "PYTHON PROGRAMMING Using Problem Solving Approach", Oxford University Press, 2017.

	Prepared by	Approved by
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Date	21/01/19	21/01/19
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD