	National Institute of Technology Meghalaya An Institute of National Importance	CURRICULUM

Programme	**Bachelor of Technology in Computer Science and Engineering**	Academic Year of Regulation	**2018-19**
Department	**Computer Science and Engineering**	Semester	**IV**

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
CS 272	**Object Oriented Programming**	**2**	**0**	**0**	**2**	**50**	**50**	**100**	**200**

Course Objectives	Course Outcomes		
To provide students in-depth theoretical base and fundamentals of Object Oriented Programming paradigm		CO1	**Able to demonstrate the procedural and object oriented paradigm with concepts of data, functions, classes and objects**
To prepare students to design and code various projects using Object Oriented Programming paradigm		CO2	**Able to illustrate dynamic memory management techniques using pointers, constructors, destructors etc.**
		CO3	**Able to make use of the concept of function overloading, operator overloading, type conversion and polymorphism**
		CO4	**Able to interpret the concept of Inheritance and its various types along with the understanding of late binding**
		CO5	**Able to compare the procedures of file handling and exception handling in C++**
		CO6	**Able to test the concept of templates and the use of Standard Template Libraries of C++**

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	3	0	1	0	1	0	0	0	0	1	1	1	0	0	0
2	CO2	2	3	3	2	1	1	0	0	1	0	0	0	1	1	1
3	CO3	3	3	3	2	1	0	0	0	1	0	0	0	0	1	1
4	CO4	3	1	1	2	0	0	0	0	0	0	0	0	0	2	3
5	CO5	3	0	3	1	3	0	0	0	1	0	0	0	0	1	1
6	CO6	3	2	2	2	0	0	0	0	2	0	0	0	0	0	1

SYLLABUS

No.	Content	Hours	COs
I	**Introduction:** **Introduction to object oriented programming, user defined types, structures, unions, polymorphism, encapsulation;**	**01**	**CO1**
II	**Beginning with C++:** **Getting started with C++ syntax, data types, variables, data types, type conversion – implicit and explicit, inline functions, string class, specifying classes and objects;**	**03**	**CO2**
III	**Classes and Objects:** **Data hiding, member function, memory allocation, static members, static objects, array of objects, friendly function, pointers to members, constructors and destructors;**	**04**	**CO2**
IV	**Concept of Overloading:** **Function overloading, operator overloading of unary, binary, special operators; Type conversion; Compile Time Polymorphism**	**03**	**CO3**
V	**Inheritance:** **Introduction to inheritance, different types; Single inheritance – public and private derivation, protected member, constructor and destructor in derived class; Multilevel and multiple inheritance; Ambiguity resolution; Hierarchical and hybrid inheritance; Virtual base class; Object slicing; Pointer to base and derived class; Virtual functions;**	**09**	**CO4**
VI	**File Handling:** **Streams, classes for file stream, opening a file, detecting the EOF, file modes, file pointers and their functions, types of files, i/p and o/p functions for sequential and random access, error handling.**	**02**	**CO5**
VII	**Templates:** **Function templates, class templates, advantages and disadvantages, Standard Template Library.**	**02**	**CO6**
Total Hours		**24**	

Essential Readings

1. Robert Lafore, “Object-Oriented Programming in C++”, 4th Edition, Sams Publishing, 2001.
2. E Balagurusamy, “Object-Oriented Programming in C++”, 8th Edition, McGraw-Hill Education India, 2020.
3. Yashvant Kanetkar, “Let Us C++ “, BPB Publication, 2020.

Supplementary Readings

1. P.J. Deitel and H.M Deitel ,”C++ How to Program”, 10th Edition, Pearson Publication, 2016.
2. Herbert Schildt, “C++: The Complete Reference”, 4th Edition, McGraw-Hill Education India, 2017.
3. Bjarne Stroustrup, “The C++ Programming Language”, 3rd Edition, Pearson Education India, 2002.