

MODULE DESCRIPTOR FORM

Module Information				
تیسار دلا قداملا تامولعم				
Module Title	OBJECT ORIENTED PROGRAMMING			Module Delivery
Module Type	BASIC			- Theory Lecture - Lab - Practical Seminar
Module Code	OBOP211			
ECTS Credits	8			
SWL(hr/sem)	200			
Module Level 1	2	Semester of Delivery	1	
Administering Department	Department of Computer Science	College	Computer Science	
Module Leader	م.د. ازهار	e-mail		
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD.	
Module Tutor	None	e-mail	None	
Peer Reviewer Name		e-mail		
Review Committee Approval		Version Number		

Relation With Other Modules				
Prerequisite module	STRUCTURED PROGRAMMING		Semester	2

Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents			
Module Aims	- Teaching the students the concept of functions and how to call and passing values to them, Function Overloading and Inline function concepts. - Studying the Basic of Object Oriented Programming(OOP) and its features (Encapsulation, Inheritance, Polymorphism). - Teaching students Constructor and Destructors, Friend Function and Friend Classes Constant Member Functions and Constant Objects, Static Data Member and Static Function, Pointer to Objects and Array of Objects. - Teaching students Operator Overloading (Unary and Binary Operator Overloading). - Teaching students Inheritance Feature with its types. - Teaching students Polymorphism Feature with virtual functions. - Teaching students Function Template and class Template.		
Module Learning Outcomes	- Perform Functions Concepts such as passing parameters, Overloading and Inline. - Understanding the Concept of Object Oriented Programming: Object and Class, - Understanding the meaning of Constructor and Destructors. - Understanding the meaning of Friend Function and Friend Class - Perform Classes Constant Member Functions and Constant Objects, Static Data Member and Static Function. - Understanding the concept of Unary and Binary Operators Overloading. - Learn how to deal with types of Inheritances Single, Hierarchical, Multilevel, and Multiple Inheritance. - Capable of using Polymorphism and Dynamic Binding. - Give the student the ability of using Function Template and class Template.		
Indicative Contents	- Explain how to define Overloading and Inline functions, objects with encapsulation data, Constructor and Destructors functions. - Explain the use of Operators Overloading with various types of Inheritances.		

	3. Let the students see many examples about Polymorphism and Templates.
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Learning and Teaching Strategies

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Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

Structured SWL (h/sem)	108	Structured SWL (h/w)	7.2
Unstructured SWL (h/sem)	92	Unstructured SWL (h/w)	6.13
Total SWL (h/sem)	200		

Module Evaluation

		Time/ Nu mber	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessm ent	Quizzes	1	10% (10)	5	LO # 1 and 3
	Practical Seminar(Lab)	2	15% (15)	Continuous	LO # 2 , 4 and 5

Summative assessment	Midterm Exam	1 hr	15% (15)	14	LO # 1 to 5
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	➤ Overview for functions and parameter transmission - Function Overloading and Inline Function - Default Argument, Pass by Reference and Return by Reference
Week 2	➤ Introduction to Object Oriented Programming Concept of Object Oriented Programming: Object, Class, Abstraction, Encapsulation, Inheritance, Polymorphism
Week 3	- Objects and the Member Access, Defining Member Function - Object as Function Arguments and Return Type
Week 4	➤ Constructor and Destructors
Week 5	➤ Friend Function and Friend Classes
Week 6	- Constant Member Functions and Constant Objects - Static Data Member and Static Function
Week 7	➤ Pointer to Objects and Member Access
Week 8	➤ Array of Objects
Week 9	➤ Operator Overloading - Overloading Operators and Syntax of Operator Overloading - Unary Operator Overloading and its types
Week 10	➤ Binary Operator Overloading

Week 11	➤ Inheritance • Base and Derived Class • Derived Class Declaration • Inheritance and derived classes
Week 12	➤ Forms of Inheritance: • Single and Hierarchical • Multiple • Multilevel
Week 13	➤ Polymorphism and Dynamic Binding • Types of polymorphism , Need of Virtual Function • Pointer to Derived Class • Definition of Virtual Functions • Array of Pointers to Base Class • Pure Virtual functions and Abstract Class
Week 14	➤ Templates • Function Template • Overloading Function Template • Class Template ○ Function Definition of Class Template ○ Default Arguments with Class Template ○ Derived Class Template
Week 15	Mid Term Exam and Preparatory Week
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	➤ Overview for functions and parameter transmission • Function Overloading and Inline Function • Default Argument ,Pass by Reference and Returnby Reference
Week 2	➤ Introduction to ObjectOriented Programming • Concept of Object Oriented Programming: Object,Class, Abstraction, Encapsulation, Inheritance, Polymorphism
Week 3	• Objects and the Member Access, Defining Member Function • Objectas Function Arguments and Return Type
Week 4	➤ Constructor and Destructors

Week 5	➤ Friend Function and Friend Classes
Week 6	• Constant Member Functions and Constant Objects • Static Data Member and Static Function
Week 7	Pointer to Objects and Member Access
Week 8	Array of Objects
Week 9	➤ Operator Overloading • Overloading Operators and Syntax of Operator Overloading Unary Operator Overloading and its types
Week 10	Binary Operator Overloading
Week 11	➤ Inheritance • Base and Derived Class and Derived Class Declaration • Inheritance and derived classes
Week 12	➤ Forms of Inheritance: • Single and Hierarchical, Multiple and Multilevel
Week 13	➤ Polymorphism and Dynamic Binding

Learning and Teaching Resources سیر دتلاو ملعتلا رداصم		
	Text	Available in the Library?
Required Texts	Joyce Farrell, "Object-Oriented Programming Using C++", Fourth Edition, Course Technology, 2009.	No
Recommended Texts	Bjarne Stroustrup, "Programming Principles and Practice Using C++", Second Edition, Addison-Wesley, 2014.	No
Websites	https://www.w3schools.com/cpp/default.asp	

	• Types of polymorphism , Need of Virtual Function • Pointer to Derived Class • Definition of Virtual Functions • Array of Pointers to Base Class • Pure Virtual functions and Abstract Class
Week 1 4	➤ Templates • Function Template • Overloading Function Template • Class Template ○ Function Definition of Class Template ○ Default Arguments with Class Template ○ Derived Class Template
Week 1 5	Final Exam