



Module (Course Syllabus) Catalogue 2023-2024

College/ Institute	Koya Technical Institute	
Department	Information Technology	
Module Name	Object Oriented Programming	
Module Code	OOP301	
Semester	3	
Credits	6	
Module type	Prerequisite <input type="checkbox"/>	Core <input type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours	4	
Weekly hours (Theory)	(2)hr Class	()hr Workload
Weekly hours (Practical)	(2)hr Class	()hr Workload
Lecturer (Theory)	Wshyar Omar Khudhur	
E-Mail & Mobile NO.	Wshyar.khudhur@epu.edu.iq	
Lecturer (Practical)		
E-Mail & Mobile NO.		

Course Book

<p>Course Description</p>	<p>This course introduces the concepts of object-oriented programming(OOP) to students with a background in the procedural paradigm. The course Start with a brief review of control structures and data types with array processing. It then moves on to introduce the object-oriented programming paradigm, focusing on the definition and use of classes along with the fundamentals of object-oriented design. Other topics include an overview of programming language principles, simple analysis of algorithms, basic searching and sorting techniques, event-driven programming, memory management and an introduction to software engineering issues.</p>												
<p>Course objectives</p>	<p>It makes the student to have well understanding of classes, objects, methods, modifiers, and their architecture. It also clarifies the encapsulation, inheritance, and polymorphism which are the main features that object oriented programming can support. Throughout this course students will be able to realize and apply in practice all the theoretical bases with C# Programming language in their lab. After that it provides a good base about file input/ output. Then it goes through Exception handling, inner classes, Event handling, and Basic GUI components.</p>												
<p>Student's obligation</p>	<p>After finishing this course, students will be able to:</p> <ol style="list-style-type: none"> 1. Design, program, and debug Python applications to solve non-trivial problems. 2. Write scripts to collect, process, and/or analyses data. 3. Explain OOP concepts, principles, design patterns and methods. 4. Test and assess code quality. 5. Write clear and elective documentation. 												
<p>Required Learning Materials</p>	<ul style="list-style-type: none"> • Power point slides use in the class including Example of OOP programming Language and experimental images. • white board uses to explain more details. • Data Show 												
<p>Assessment scheme</p>	<table> <tr> <td>20%</td> <td>Mid Term (Theory and practical)</td> </tr> <tr> <td>8 %</td> <td>Quiz</td> </tr> <tr> <td>2 %</td> <td>Class Activiti</td> </tr> <tr> <td>30%</td> <td>Assignment (report, paper, homework, seminar..)</td> </tr> <tr> <td>20%</td> <td>final practical</td> </tr> <tr> <td>20%</td> <td>final theory</td> </tr> </table>	20%	Mid Term (Theory and practical)	8 %	Quiz	2 %	Class Activiti	30%	Assignment (report, paper, homework, seminar..)	20%	final practical	20%	final theory
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<p>Specific learning outcome:</p>	<p>Upon successful completion of this course, students will be able to:</p> <ol style="list-style-type: none"> 1. Object Oriented Programming course is gives students a chance to know how to programming in particular way. The fundamental objective in this course is to enhance student programming abilities. 2. In this course the student will enhance his/her ability in programming and how-to doing sample project. 												

	<p>3. The student will get data about information encapsulation, abstraction, inheritance and polymorphism which are OOP properties.</p> <p>4. The program which is utilizing to solve reality issue ought to be written in progressing and modular way. So, the restructure of the program is essential at present days.</p> <p>5. By taking this course will help the student in reaching with the truth life and separately will help the student effectively finding work. These days, Information Technology (IT) has an important part in the all fields of life as a result of the office and speed which are given by IT. Thus, the writing computer programs is critical in the IT world and can be considered as a spine of IT. That is the reason enthusiasm for writing computer programs is vital and directed with the organizations, companies and the other job marketing needs.</p>	
<p>Course References:</p>	<ul style="list-style-type: none"> ▪ Key references: <ul style="list-style-type: none"> • C# Programming and Object-Oriented Application Development, Richard A. Johnson, 2007. • • http://www.oracle.com/technetwork/java/index.html Java Homepage • • https://docs.oracle.com/javase/tutorial Java Online Tutorial, also available locally. ▪ Useful references: <ol style="list-style-type: none"> 1. A GETWAY TO THE C++ LANGUAGE. (ARAM M. KHAYAT, 2008) ▪ Magazines and review (internet): <ol style="list-style-type: none"> 1. www.cprogramming.com/tutorial.html 2. www.W3schools.com 	
Course topics (Theory & Practical)	Week	Learning Outcome
Introduction	1	<ul style="list-style-type: none"> ○ Welcome students to the new year and clarify the materials that have written in the course book and afterward turn out the goals of this course. ○ Quick Review: Especially Data Types, Declaration Of Variables, Constant, Operators and Arithmetic Operations. ○ Explain Object Oriented Programming (OOP)?
Functions	2	<ul style="list-style-type: none"> ○ (Function's Parts: Prototype Part, Calling Function, Definition of Function and Parameters), Recursion Function, Calling by Reference Or calling by value and some templates of function (Prepared Functions').

Classes and Objects	3	<ul style="list-style-type: none"> ○ Program with Class and Determining Class. ○ Software code in OOP is written to define classes, instantiate objects, and manipulate these objects.
Features of OOPs	4	<ul style="list-style-type: none"> ○ Explain Concept of OOP by briefly like Inheritance, Polymorphism, Abstraction, Encapsulation and etc.
Constructor	5	<ul style="list-style-type: none"> ○ Constructor has same name as the class itself. ○ Constructors don't have return type. ○ A constructor is automatically called when an object is created. ○ Explain types of constructor
Destructor	6	<ul style="list-style-type: none"> ○ Destructor functions are the inverse of constructor functions. ○ The destructor must have the same name as the class, preceded by a tilde (~). ○ Explain difference between Constructor and destructor
Inheritance	7	<ul style="list-style-type: none"> ○ It is one of the key features of OOP. ○ It allows user to create a new class (derived class) from an existing class (base class). ○ The derived class inherits all the features from the base class and can have additional features of its own. ○
Inheritance Types: Single inheritance.	8	<ul style="list-style-type: none"> ○ Explain types of inheritance briefly, single inheritance by detail. ○ In single inheritance a class is allowed to inherit from only one class. ○ one sub class is inherited by one base class only.
Multiple inheritance and Hierarchy inheritance.	9	<ul style="list-style-type: none"> ○ in Multiple inheritance one sub class is inherited from more than one base classes. ○ In Hierarchy inheritance, more than one sub class is inherited from a single base class.
Multilevel inheritance and Hybrid inheritance.	10	<ul style="list-style-type: none"> ○ In Multilevel inheritance a derived class is created from another derived class. ○ Hybrid inheritance Combining Hierarchical inheritance and Multiple

		Inheritance.
Read File	11	○ File operations (Delete, Compare, Insert)
Write File	12	○ File operations (Delete, Compare, Insert)

Questions Example Design

Q1: A// What are the various elements of OOP? Explain briefly.

Q2\ For each question, choose the correct answer from the multiple choice below:

1. Which of the following is not a type of object-oriented abstraction?

- a- Abstraction of data b- Abstraction of function
c- Abstraction of structure d- Abstraction of name

Answer: d.

Q3/ Define each of the following Question :

1. Class 2. Inheritance 3. Object

External Evaluator