



جمهورية مصر العربية

وزارة التعليم العالي والبحث العلمي

Ministry of Higher Education and Scientific Research



المعهد العالى للحاسبات وتكنولوجيا المعلومات
مدينة الشروق - القاهرة
شعبة علوم الحاسب

Course specification

Course Code: CS 203

Course Title: Object Oriented Programming

Academic Year: 2022 /2023

Course specification
(CS 203 - Object Oriented Programming)

Course Outline

Faculty:	<i>HICIT- (Higher Institute for Computers & Information Technology-El Shorouk Academy)</i>		
Programme(s) on which the course is given:	Undergraduate program in Computer Science		
Major or minor element of programme:	Compulsory		
Department offering the program	Department of Computer Science		
Department offering the course:	Department of Computer Science		
Level	Second Level		
Date of specification approval	3/9/2022		

Basic Information

Code:	CS 203	Title:	Object Oriented Programming
Prerequisites:	CS 102 Computer Programming		
Weekly Hours:			
Lecture: 2	Exercise: -	Practical : 2	Total: 3 credit hours

Professional Information

Course Aims:

This module builds on students' previous knowledge of basic programming to provide an introductory approach to object-oriented software development. Fundamentals of classes and objects as key features of programming in terms of design and implementation will be emphasized. Collection objects are also covered and the availability of library classes as building blocks. In addition, students will learn how polymorphism can reduce software production time and implement software re-usability.

After completing this course students must be able to:

- a. Build and manipulate with classes.
- b. Using objects.
- c. Implement the inheritance and polymorphism concepts.

a2	Deep understanding the concepts of the different high-level programming languages.
a11	Select advanced topics to provide a deeper understanding of some aspects of object-oriented analysis and design, and software engineering.
a13	Demonstrate strong knowledge of fundamentals of programming and the construction of computer-based systems.

a20	Describe the principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.
b3	Perform classifications of (data, results, methods, techniques, algorithms, etc.).
b4	Identify attributes, components, relationships, patterns, main ideas, and errors.
c1	Use appropriate programming languages and design methodologies.
c5	Specify, design, and implement and manage computer-based systems.
c10	Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved in using computers to solve practical problems.
c16	Apply tools and techniques for the design and development of applications.
d5	Demonstrate efficient IT capabilities.

Program ILOs Covered by Course

Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
A2, A11, A13, A20	B3, B4	C1, C5, C10, C16	D5

Intended learning outcomes of course (ILOs)

a. Knowledge and Under-Standing:

- a1. Understand and apply a wide range of principles and tools available to the object-oriented Programming.
- a2. Defining classes and Using objects.
- a3. Know and understand the fundamental concepts, principles and theories of a class, object, polymorphism, and inheritance.
- a4. Implement the concepts of inheritance and polymorphism.
- a5. Implement the Abstract classes, Interfaces and OO Model.

b. Intellectual Skills:

- b1. Think in object-oriented programs.
- b2. Build independent modules (classes and objects) that can be used in different programs.

c. Professional and practical skills

- c1. Implement and develop an object-oriented program efficiently.
- c2. Reuse the classes that were built during his practical work in computer lab to develop a bigger project.
- c3. Use a range of software development tools (e.g. text editor and compiler);
- c4. Use features of an object-oriented programming language (e.g. inheritance, polymorphism to write programs);
- c5. Design appropriate interfaces between modular components;

d. General and transferable skills

- d1. Learn some Internet/Library searching strategies.
- d2. Write a short report using appropriate scientific language.
- d3. Use IT skills and display mature computer literacy.

Contents		
Topic	Contact Hours	
	lecture	Lab
The conceptual basis of Object Orientated Programming	3	4
Introduction to the Unified Modeling Language.	3	4
Primitive data types and data types as object. Data Abstraction and encapsulation	6	8
Classes and object as abstract data types. Message passing.	3	4
An object-oriented programming language syntax, creating objects from class definitions (e.g. C#).	3	4
Operators, Operator overloading, delegates, and events	6	8
Object oriented programming: Inheritance Access control, Method hiding, Virtual methods and dynamic binding, method overriding	6	8
Object oriented programming: Polymorphism, Abstract class, Interface	3	4
Exception handling	3	4
Course Project	3	4

Teaching and learning methods	
Teaching and learning methods	Used
Lectures	√
Tutorial Exercises	√
Practical Lab	√
Discussions.	√
Self – Learning (Reading material, Websites search,)	√
Self-studies	√
Group work	√
Presentation	√
Problem solving/problem solving learning based	√
Case study	√
Synchronous E-Learning	√
Video lectures	√
Asynchronous E-Learning	√

Student assessment methods & Schedule		
Methods	Used	Week#
Midterm Exam	√	8
Final Exam	√	16
Course Project	√	3-14
Course Work & Quizzes	√	2-14
Practical Exam	√	15

Assessment Weight

Assessment	Weight %
Mid Term Exam	10%
Practical Exam and Project	10%
Final Exam	60%
Course Work & Quizzes	10%
Course Project	10%
Total	100

Course Work & Quizzes

Short Exams, Assignments, Research, Reports, Presentations
Class/Project discussion

List of references

Essential books (textbooks)	<ul style="list-style-type: none"> - Visual C# 2010 How to Program, 4/e, Deitel & Associates, 2010 - Fowler, M., "UML Distilled: A Brief Guide to the Standard Object Modeling Language", 3rd Edition, Pearson, ISBN10: 0321193687 (2003).
Course notes	E-Learning Portal
Recommended books	<p>Hands-On Object-Oriented Programming with C# by Raihan Taher Released February 2019 Publisher(s): Packt Publishing ISBN: 9781788296229</p>
Periodicals, website	<p>https://www.w3schools.com/cs/index.php</p> <p>https://learn.microsoft.com/en-us/dotnet/csharp/tour-of-csharp/tutorials/</p>
Videos link	

Required Facilities

Tools & SW (Technology facilities):	- Visual Studio 2012	
Teaching facilities:	Whiteboard	√
	Computer Lab	√
	Data show	√
	E-Learning	√
	Videos	√
	Website	√

Course Content/ILO Matrix

Course Contents	Knowledge & understanding					Intellectual skills		Professional and practical skills					General		
	a1	a2	a3	a4	a5	b1	b2	c1	c2	c3	c4	C5	d1	d2	d3
Primitive data types and data types as objects. Data Abstraction and encapsulation.	x														
Classes and object as abstract data types. Message passing.		x													
An object-oriented programming language syntax, creating objects from class definitions (e.g. C#)		x	x												
Operators, Operator overloading, delegates, and events				x											
Object oriented programming: Inheritance Access control, Method hiding. Virtual methods and dynamic binding, method overriding				x		x	x		x	x					
Object oriented programming: Polymorphism, Abstract class, Interface					x	x	x	x		x	x				
Exception handling								x			x				
Course project													x	x	x

Learning Method /ILOs Matrix

Learning Methods	Knowledge and understanding					Intellectual skills		Professional and practical skills					General		
	a1	a2	a3	a4	a5	b1	b2	c1	c2	c3	c4	C5	d1	d2	d3
Lectures	x	x	x	x	x	x	x	x	x	x	x				
Tutorial Exercises						x	x	x	x	x	x				
Practical Lab						x	x	x	x	x	x				
Discussions.						x	x	x	x	x	x		x	x	x

Assessment Methods /ILOs Matrix

Assessment Methods	Knowledge & understanding					Intellectual skills		Professional & practical skills					General		
	a1	a2	a3	a4	a5	b1	b2	c1	c2	c3	c4	C5	d1	d2	d3
Mid Term Exam	x	x	x	x	x	x	x	x	x	x	x				
Final Exam	x	x	x	x	x	x	x								
Course Project	x	x	x	x	x	x	x	x	x	x	x		x	x	x
Course Work & Quizzes	x	x	x	x	x	x	x	x	x	x	x		x	x	x
Practical Exam	x	x	x	x	x	x	x	x	x	x	x				

Course ILOs Vs Program ILOs

Course ILOs \ Prog ILOs		Knowledge & understanding				Intellectual skills		Professional and practical skills				General
		A2	A11	A13	A20	B3	B4	C1	C5	C10	C16	D5
Knowledge and Understanding	a1	√	√	√								
	a2	√			√							
	a3	√	√	√								
	a4				√							
	a5				√							
Intellectual skills	b1					√						
	b2						√					
Professional and practical skills	c1							√	√	√	√	
	c2							√	√	√	√	
	c3							√	√	√	√	
	c4							√	√	√	√	
	c5								√	√	√	
General skills	d1											√
	d2											√
	d3											√

Course Coordinator : Dr. Mohamed A.Hussein ()

Head of Department : Assoc. Prof. Ahmed El-Abbasy ()

Date: 3/9/2023