Republic of Yemen

Ministry of Higher Education & Scientific Research

Council of Academic Accreditation & Quality Assurance of Higher Education(CAQA)

21 September University for Medical and Applied Sciences

Faculty of Engineering and Computer

Department of Information Technology

Program of Information Technology

Course Specification of

Object-Oriented Programming

Course Code. (07.01. 706)

2024

T4: This Template is Developed and Approved by CAQA-Yemen, 2023

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean
Dr. Malek Algabri	Dr. -----			

I. General Information:

1.	Course Title:	Object-Oriented Programming				
2.	Course Code:	07.01. 706				
3.	Credit Hours:	Credit Hours	Theory Contact Hours		Practical Contact Hours	
			Lecture	Tutorial/ Seminar	Lab	Clinical
		3	2	--	2	--
4.	Level/ Semester at which this Course is offered:	Level 2/ Semester 2				
5.	Pre –Requisite (if any):	07.01.703				
6.	Co –Requisite (if any):	non				
7.	Program (s) in which the Course is Offered:	Bachelor of Medical Information Technology				
8.	Language of Teaching the Course:	English				
9.	Location of Teaching the Course:	Faculty of Medical Technology				
10.	Prepared by:	Dr. Malek Algabri				
11	Date and Number of Approval by Council:					

II. Course Description:

This course teaches object-oriented programming with introduction to visual programming to those who have learnt basic programming concepts and are ready to learn in-depth programming. It is an expository of the object-oriented programming methodology with emphasis on software design and code reuse as its core objectives with use to GUI components. The main concepts discussed are: Objects, Data Abstraction, Data Encapsulation, Inheritance, and Polymorphism. In addition to window-based, event-driven application design and implementation, data types, operators, properties, menus, and database file processing, and building visual components (windows, menus, message-boxes, buttons, lists, etc.), managing containers and layout,

event-handlers, exceptions, and employing GUI class libraries.

III. Course Intended Learning Outcomes (CILOs): Upon successful completion of the course, students will be able to:		Referenced PILOs
	CILOs	**I, P or M/A**
	A. Knowledge and Understanding:	
a1	Explain the many concepts in object-oriented programming paradigm.	A1
a2	Understanding of object-oriented programming.	A1,A2
	B. Intellectual Skills:	
b1	Use the object-oriented technique to analyze software problems.	B2,B4
b2	Use event-driven programming.	B2,B3
	C. Professional and Practical Skills:	
c1	Design software solutions to some types of problems.	C2,C4
c2	Implement, test, and debug object-oriented programming applications.	C1,3
	D. Transferable Skills:	
d1	Work effectively both in a team and independently.	D1

	(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:		
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
a1	Explain the many concepts in object-oriented programming paradigm.	Lectures Tutorials	Assignments, Exams Quiz
a2	Understanding of object-oriented programming	Lectures Tutorials	Assignments, Exams Quiz
	(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching		

	Strategies and Assessment Methods:		
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
b1	Use the object-oriented technique to analyze software problems.	Lectures Tutorials Lab	Assignments, exams, experimental tech reports, project reports
b2	Use event-driven programming.	Lectures Tutorials Lab	Assignments, exams, experimental tech reports, project reports
	(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:		
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
c1	Design software solutions to some types of problems.	Lectures Tutorials case study Lab	Assignments, Project, exams Quiz
c2	Implement, test, and debug object-oriented programming applications.	Lectures Tutorials case study Lab	Assignments, Project, exams Quiz
	(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods		
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
d1	Work effectively both in a team and independently	Working in group	Small project

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	OOP Concepts	Introduction into: Class, Object, Data Abstraction, Data Encapsulation,	1	2	a1

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
		Inheritance, Polymorphism and Interface			
2	Class, Object	Using Class and Object	2	4	a1,b1,c1
3	**Encapsulation**	Introduction Properties Access specifier: Public, Private, Protect	1	2	a1,b1,c1
4	**Inheritance**	Introduction Base Classes and Derived Classes Protected Members Relationship Between Base Classes and Derived Classes Constructors in Derived Classes	2	4	a1,b1,c1
5	**operator Overloading**	Operator overloading	1	2	a1, b1, c1
6	**Mid-term Exam**	Exam	1	2	a1, b1, c1
7	**Polymorphism, Interface and**	Introduction Demonstrating Polymorphic Behavior Abstract Classes and Methods. Polymorphic Processing, Operator Sealed Methods and classes Using Interfaces.	2	4	a1, b1, c1
9	**Graphical User Interfaces(GUI)**	Introduction Windows Forms Event Handling	4	8	a1,a2, b1, b2, c1, c2

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
		A Simple Event-Driven GUI Delegates and the Event-Handling Mechanism Control Properties and Layout Labels, TextBoxes and Buttons GroupBoxes and Panels CheckBoxes and RadioButtons PictureBoxes ToolTips NumericUpDown Control Mouse-Event Handling Keyboard-Event Handling Menus MonthCalendar Control DateTimePicker Control LinkLabel Control ListBox Control CheckedListBox Control ComboBox Control TreeView Control ListView Control TabControl Control Multiple Document Interface (MDI) Windows Visual Inheritance			
10	**Database**	Introduction. ADO.NET Connection Command DataReader DataAdapter DataSet Parameters Stored Procedures	1	2	a1,a2, b1, b2, c1, c2

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
Number of Weeks /and Units Per Semester			16	32	

B. Case Studies and Practical Aspect:

No.	Tasks/ Experiments	Week Due	Contact Hours	Learning Outcomes (CILOs)
1	Class, Object	2nd, 3rd	4	a1, b1,c1
2	Encapsulation	4th,5th	4	a1, b1,c1
3	Inheritance	6th	2	a1, b1,c1
4	operator Overloading	7th	2	a1, b1,c1
5	Mid-term exam	8th	2	all
6	Polymorphism, Interface	9th, 10th,	4	a1, b1,c1
7	Graphical User Interfaces(GUI)	11th, 12th, 13th	6	a1,a2, b1, b2, c1, c2
8	Database	14th	2	a1,a2, b1, b2, c1, c2
9	Final- exam	15th	2	all
Number of Weeks /and Units Per Semester		14	28	

C. Tutorial Aspect:

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	N/A			
Number of Weeks /and Units Per Semester				

V. Teaching Strategies of the Course:

- Lectures
- Tutorials
- Problem solving
- Lab
- Case study
- Small project

VI. Assessment Methods of the Course:

- Written Tests (Mid and Final Terms Tests)
- Exercises and Homework
- Project/Technical report
- Quizzes
- Presentation.

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs(symbols)
1	Design a light weigh project using OOP concepts.	8th	2.5	a1, b2, c1, d1
2	Design and Implement small project Using GUI	13th	2.5	a1, a2, b1, b2, c1, c2, d1
3	Design and Implement small project Using GUI and Database	15th	5	a1, a2, b1, b2, c1, c2, d1
Total			10	

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments and Small project	8th, 13th, 15th	10	10%	a1, a2, b1, b2, c1, c2, d1
2	Lab exams	7th, 14th	10	10%	a1, a2, b1, b2, c1, c2, d1

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
3	Mid Term Exam	8th	20	20%	a1, a2, b1, b2, c1, c2
4	Final Exam	16th	60	60%	a1, a2, b1, b2, c1,c2
Total				100%	

IX. Learning Resources:

- *Written in the following order:* Author, Year of publication, Title, Edition, Place of publication, Publisher.

1- Required Textbook(s) (maximum two):

1- Deitel & Deitel, 2018, "Visual C# How to Program", sixth Edition, Pearson Education, ISBN -13: 978-1-292-15346-9.
2- Deitel, 2021, "***C++20 for Programmers***", Pearson Education.
3. Deitel & Deitel, 2016, "***C++ How to Program***", tenth Edition, Pearson Education, ISBN-13:978-0134448237.

2- Essential References:

3- Electronic Materials and Web Sites etc.:

X. Course Policies: (Based on the Uniform Students' By law (2007)

1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.

4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.

Republic of Yemen
Ministry of Higher Education & Scientific Research
University: 21 September University for Medical & Applied Sciences

الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة: جامعة 21سبتمبر للعلوم الطبية والتطبيقية

Faculty of Medical Technology

Department of Medical Information Technology

Program of Medical Information Technology

Course Specification of

Object-Oriented Programming

Course Code. (07.01. 706)

I. Information about Faculty Member Responsible for the Course:							
Name of Faculty Member:		Office Hours					
Location& Telephone No.:	—–						
E-mail:	--@–.–	SAT	SUN	MON	TUE	WED	THU

2024/2025

II. Course Identification and General Information:				
	Course Title:	Object-Oriented Programming		
	Course Code:	07.01. 706		
	Credit Hours:	Credit	Theory Contact Hours	Practical

		Hours	Contact Hours			
			Lecture	Tutorial/Seminar	Lab	Clinical
		3	2	--	2	--
	Level/ Semester at which this Course is offered:	Level 2/ Semester 2				
	Pre –Requisite (if any):	**07.01.703**				
	Co –Requisite (if any):	non				
	Program (s) in which the Course is Offered:	Bachelor of Medical Information Technology				
	Language of Teaching the Course:	English				
	Location of Teaching the Course:	Faculty of Medical Technology				
	Prepared by:	Dr. Malek Algabri				
11	**Date and Number of Approval by Council:**					

III. Course Description:

This course teaches object-oriented programming with introduction to visual programming to those who have learnt basic programming concepts and are ready to learn in-depth programming. It is an expository of the object-oriented programming methodology with emphasis on software design and code reuse as its core objectives with use to GUI components. The main concepts discussed are: Objects, Data Abstraction, Data Encapsulation, Inheritance, and Polymorphism. In addition to window-based, event-driven application design and implementation, data types, operators, properties, menus, and database file processing, and building visual components (windows, menus, message-boxes, buttons, lists, etc.), managing containers and layout, event-handlers, exceptions, and employing GUI class libraries.

IV. Course Intended Learning Outcomes (CILOs): Upon successful completion of the course, students will be able to:	
a1	Explain the many concepts in object-oriented programming paradigm.
a2	Understanding of object-oriented programming.
	B. Intellectual Skills:
b1	Use the object-oriented technique to analyze software problems.
b2	Use event-driven programming.
	C. Professional and Practical Skills:
c1	Design software solutions to some types of problems.
c2	Implement, test, and debug object-oriented programming applications.
	D. Transferable Skills:
d1	Work effectively both in a team and independently.

V. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1	**OOP Concepts**	Introduction into: Class, Object, Data Abstraction, Data Encapsulation, Inheritance, Polymorphism and Interface	1	2
2	Class, Object	Using Class and Object	2	4

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
3	**Encapsulation**	Introduction Properties Access specifier: Public, Private, Protect	1	2
4	**Inheritance**	Introduction Base Classes and Derived Classes Protected Members Relationship Between Base Classes and Derived Classes Constructors in Derived Classes	2	4
5	**operator Overloading**	Operator overloading	1	2
6	**Mid-term Exam**	Exam	1	2
7	**Polymorphism, Interface**	Introduction Demonstrating Polymorphic Behavior Abstract Classes and Methods. Polymorphic Processing, Operator Sealed Methods and classes Using Interfaces.	2	4
9	**Graphical User Interfaces(GUI)**	Introduction Windows Forms Event Handling A Simple Event-Driven GUI Delegates and the Event-Handling Mechanism Control Properties and Layout Labels, TextBoxes and Buttons GroupBoxes and Panels CheckBoxes and RadioButtons PictureBoxes ToolTips NumericUpDown Control Mouse-Event Handling	4	8

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
		Keyboard-Event Handling Menus MonthCalendar Control DateTimePicker Control LinkLabel Control ListBox Control CheckedListBox Control ComboBox Control TreeView Control ListView Control TabControl Control Multiple Document Interface (MDI) Windows Visual Inheritance		
10	**Database**	Introduction. ADO.NET Connection Command DataReader DataAdapter DataSet Parameters Stored Procedures	1	2
Number of Weeks /and Units Per Semester			**16**	**32**

B. Case Studies and Practical Aspect:

No.	Tasks/ Experiments	Week Due	Contact Hours
1	Class, Object	2nd, 3rd	4
2	Encapsulation	4th, 5th	4
3	Inheritance	6th	2
4	operator Overloading	7th	2

No.	Tasks/ Experiments	Week Due	Contact Hours
5	Mid-term exam	8th	2
6	Polymorphism, Interface	9th, 10th	4
7	Graphical User Interfaces(GUI)	11th, 12th, 13th	6
8	Database	14th	2
9	Final- exam	15th	2
Number of Weeks /and Units Per Semester		14	28

C. Tutorial Aspect:

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	N/A			
Number of Weeks /and Units Per Semester				

VI. Teaching Strategies of the Course:

- Lectures
- Tutorials
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VII. Assessment Methods of the Course:

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- Project/Technical report
- Quizzes
- Presentation.

VIII. Assignments:

No.	Assignments	Week Due	Mark
1	Design a light weigh project using OOP concepts.	8th	2.5
2	Design and Implement small project Using GUI	13th	2.5
3	Design and Implement small project Using GUI and Database	15th	5
Total			10

IX. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignments	3rd, 6th, 13th	5	5%
2	Small project	15th	5	5%
3	Lab exams	6th, 14th	10	10%
4	Mid Term Exam	7th	20	20%
5	Final Exam	16th	60	60%
Total				100%

IX. Learning Resources:

- *Written in the following order:* Author, Year of publication, Title, Edition, Place of publication, Publisher.

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3. Deitel & Deitel, 2016, "***C++ How to Program***", tenth Edition, Pearson Education, ISBN-13:978-0134448237.

2- Essential References:
3- Electronic Materials and Web Sites etc.:

XI. Course Policies: (Based on the Uniform Students' Bylaw (2007)

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6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.