



Course Definition File

Object Oriented Programming and Design

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

1. Basic Information

Course Name	Object Oriented Programming and Design (For IT)
Course Code	IPG204 (C#)
Number of Presentational Sessions*	2×12
Number of Synchronous Sessions**	12
Number of Shorter Tests***	3
Number of Exams***	1
Theoretical Sessions Work Load (hrs.)	72
Practical Session Work Load (hrs.)	36
Credit Hours	6

*Each presentational session comprises both recorded lecture (1.5 hrs.) and interactive learning content (1.5 hrs.).

**Each synchronous session comprises the interactive lecture carried out in real time in a virtual class (1.5 hrs.).

***Each shorter test is 0.5 hr. long. The final exam is 2 hrs. long.

N.B.

Generally, each chapter requires two presentational sessions: one for the recorded content and one for the interactive content (unless the chapter is too long, in which case it may require more sessions) . This note applies to synchronous sessions as well, where each chapter requires one synchronous session generally.

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

2. Prerequisites courses

Course	code
Introduction to Programming (For IT)	IPG101 (C#)

3. Course Objectives

The basic idea behind Object Oriented Programming (OOP) is to combine into a single unit both data and the methods that operate on that data, and that helps us write complex code that we could possibly difficult to manage. The aim of this course is not only to teach students the fundamental concepts of OOP such as Abstraction, Polymorphism, Encapsulation and Inheritance; but also, to use these concepts in designing and implementing complex applications using C# language.

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

4. Learning Outcomes (LO)

By the end of this course the learner is expected to:

- Understand deeply the concepts of OOP such as: classes, objects, abstraction, encapsulation, composition, inheritance, overloading and polymorphism.
- Use structure, interfaces, indexers, collections, delegates and events.
- Use namespaces.
- Know how to treat errors and handle exceptions.
- Design and implement OOP solutions using C# language.

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

5. Assessment Results

Chapter Number	Chapter Title	General Objectives	Assessment Type				
			Interactive content & Recorded Sessions	Applied Activities (Synch. Sessions)	Final Exam*/ Shorter Tests**	Presentations And Interviews***	Reports***
CH1	Classes and Objects	Comprehension –Analytical Thinking – Tools And Application Hands–On	√	√	√	√	√
CH2	Static Members and Namespaces	Comprehension –Analytical Thinking – Tools And Application Hands–On	√	√	√	√	√
CH3	Encapsulation and Overloading	Comprehension –Analytical Thinking – Tools And Application Hands–On	√	√	√	√	√

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

CH4	Composition	Comprehension –Analytical Thinking – Tools And Application Hands–On	✓	✓	✓	✓	✓
CH5	Inheritance	Comprehension –Analytical Thinking – Tools And Application Hands–On	✓	✓	✓	✓	✓
CH6	Method Hiding and Polymorphism	Comprehension –Analytical Thinking – Tools And Application Hands–On	✓	✓	✓	✓	✓
CH7	Abstract and Sealed Classes	Comprehension –Analytical Thinking – Tools And Application Hands–On	✓	✓	✓	✓	✓

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

CH8	Interfaces	Comprehension –Analytical Thinking – Tools And Application Hands–On	✓	✓	✓	✓	✓
CH9	Exceptions	Comprehension –Analytical Thinking – Tools And Application Hands–On	✓	✓	✓	✓	✓
CH10	Data Structures	Comprehension –Analytical Thinking – Tools And Application Hands–On	✓	✓	✓	✓	✓
CH11	Linked Lists and Generics	Comprehension –Analytical Thinking – Tools And Application Hands–On	✓	✓	✓	✓	✓

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

CH12	Indexers, Collections, Delegates and Events	Comprehension					
		–Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√

*The final exam is two hours long and is given at the end of the course.

**Shorter tests are about 30 minutes long and are given after three or four lectures throughout the semester during synchronous sessions.

***Presentations, interviews, and reports are submitted once after each three or four lectures throughout the semester during synchronous sessions.

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

6. Course Syllabus

Chapter	Subject	Content	Number of Learning Objects	Number of synchronous Learning Objects
CH1	Classes and Objects	<ol style="list-style-type: none"> 1. Classes and Objects in C# 2. Fields and Properties 3. Constructor vs. Destructor 4. Value Types vs. Reference Types 	4	2
CH2	Static Members and Namespaces	<ol style="list-style-type: none"> 1. Static Fields and Methods 2. Namespaces 	2	1
CH3	Encapsulation and Overloading	<ol style="list-style-type: none"> 1. Encapsulation 2. Constructor Overloading 3. Operator Overloading 	3	1
CH4	Composition	<ol style="list-style-type: none"> 1. Composition Concept 2. Composition Examples 	2	1
CH5	Inheritance	<ol style="list-style-type: none"> 1. Inheritance Concept 2. Inheritance and Access Modifiers 3. Virtual Methods and Overriding 4. Inheritance Hierarchy 	4	2
CH6	Method Hiding and Polymorphism	<ol style="list-style-type: none"> 1. Method Hiding 2. Polymorphism's Examples 	2	1

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

CH7	Abstract and Sealed Classes	1. Abstract Classes 2. Sealed Classes and Methods	2	1
CH8	Interfaces	1. Interface Concept 2. Abstraction and Interfaces 3. Implicit and Explicit Implementation	3	1
CH9	Exceptions	1. Exception Handling 2. Members of Exception Class 3. User Defined Exception Classes 4. Predefined Exceptions	4	2
CH10	Data Structures	1. Array 2. Structure 3. Boxing and Unboxing	3	1
CH11	Linked Lists and Generics	1. Self-Referential Classes 2. Linked Lists 3. Generic Methods and Classes	3	1
CH12	Indexers, Collections, Delegates and Events	1. Indexers 2. Collections 3. Delegates 4. Events	4	2

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

7. Practical Activity

- Tools and Labs:

Tool Name	Description
Microsoft Visual Studio (version 2013 or newer)	Integrated Development Environment (IDE) from Microsoft

- Distribution of Practical Activities by chapters:

Chapter	Activities Type	Remarks
CH1	<input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	
CH2	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

CH3	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	
CH4	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	
CH5	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	
CH6	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

CH7	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	
CH8	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	
CH9	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	
CH10	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

CH11	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	
CH12	<input checked="" type="checkbox"/> Exercises <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> Webinars <input type="checkbox"/> Projects <input checked="" type="checkbox"/> Experiments <input type="checkbox"/> Discussion	

Syrian Arab Republic	 الجامعة الافتراضية السورية SYRIAN VIRTUAL UNIVERSITY	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالي
Syrian Virtual University		الجامعة الافتراضية السورية

8. References

1. A. Hejlsberg, M. Torgersen, S. Wiltamuth, P. Golde : The C# Programming Language (Covering C# 4.0), Addison Wesley Pub Co Inc., 2010.
2. Dan Clark: Beginning C# Object–Oriented Programming, Berkeley, CA, Apress, 2013
3. "التصميم والبرمجة غرضية التوجّه"، الدكتور سامي خيمي، الإجازة في تقانة المعلومات، من منشورات الجامعة الافتراضية السورية، الجمهورية العربية السورية، 2018.
4. <https://docs.microsoft.com/en-us/dotnet/csharp/>.
5. <https://www.c-sharpcorner.com/>.
6. <https://www.tutorialsteacher.com/csharp/>.