



**Department of Software engineering**

**College of Engineering**

**Salahaddin University-Erbil**

**Subject: Object-Oriented Programming (OOP)**

**Course Book – (*Second Year*)**

**Omed Saleem Khalind, PhD**

**Academic Year: 2022/2023 (Second Semester)**

# Course Book

<b>1. Course name</b>	<b>Object Oriented Programming</b>
<b>2. Lecturer in charge</b>	<b>Dr. Omed Saleem Khalind</b>
<b>3. Department/ College</b>	<b>Software Engineering/ College of Engineering</b>
<b>4. Contact</b>	e-mail: omed.khalind@sue.edu.krd Tel: 07504466177
<b>5. Time (in hours) per week</b>	For example Theory: 2 Practical: 2
<b>6. Office hours</b>	Sunday, Monday
<b>7. Course code</b>	
<b>8. Teacher's academic profile</b>	<p>I am Omed Saleem Khalind, full-time Lecturer at the department of Software Engineering in Salahaddin University-Erbil. I've got Ph.D. in Software Engineering/ Information Security at University of Portsmouth - UK.</p> <p>I have taught different core subjects of Software Engineering, like; Software Engineering, Algorithms and Problem Solving, Compilers, Computer Architecture II and Computer Applications. Now, I am teaching Object-Oriented Programming using Java to second year students of Software Engineering Department, at College of Engineering. I also supervise up to two groups of four students each academic year.</p>
<b>9. Keywords</b>	<b>OOP, Class, Objects, Inheritance, Polymorphism, Encapsulation, Interface, Abstract classes.</b>
<b>10. Course overview:</b>	This course teaches the fundamental ideas behind the object-oriented approach to programming; through the widely-used Java programming language. It focuses mainly on the principals of Object Oriented programming and the techniques used in modern programming.
<b>11. Course objective:</b>	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 Java 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.
<b>12. Student's obligation</b>	<ul style="list-style-type: none"> <li>• Regular attendance is required according to the university rules.</li> <li>• The use of mobile phone during the class is prohibited.</li> <li>• Only the students who are officially enrolled can attend the class, guests and children are not admitted.</li> </ul>

### 13. Forms of teaching

In teaching any programming language and technique, after studying the principals and theoretical bases, it is important to rely on practicing the concepts, here in this course there is a rich collection of examples students can compile and run them and see the application of each topic. It follows the principal of “teaching by example” to get the best result. You’ll need to be confident using a Windows-based PC, and have experience of writing small computer programs. There are two hours per week for theoretical lecture and two hours practical in the lab for each group. The practical part focuses on applying the example codes and assignments.

### 14. Assessment scheme

The academic course consists of one semester; that has an exam (theoretical and practical), and there is 12 marks for the student’s activity per each semester. Also there is a final exam at the end of the semester. So, the student’s overall mark gets from the summation of:

Continuous exams (Theory)	20%
Continuous exams (Practical)	20%
Activities & Attendance	10%
Final exam	50%
<b>Total marks</b>	<b>100%</b>

### 15. Student learning outcome:

- Understand and uses GUI components
- Learn about Graphics programming and practicing it
- Understand and implement Inner Classes
- Understand and practicing Event Handling of GUI components
- Uses and implements Event handler classes
- Uses and implements more advanced GUI components
- Uses the java layout management for the placement of GUI components
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### 16. Course Reading List and References:

- Java how to program, 9<sup>th</sup> or 10<sup>th</sup> Edition, Deitel & Deitel, 2012.
- Schildt, H. (2014). *Java: the complete reference*. D. Coward (9<sup>th</sup> Ed.). McGraw-Hill Education.
- Java 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.

### 17. The Topics:

Lecturer's name

Weeks 1-2: Graphics Programming Weeks 3: Inner classes Weeks 4-6: Event Handling Weeks 7-14: GUI Component	Dr. Omed Saleem Khalind  (2 hrs)
<b>18. Practical Topics (If there is any)</b>	
Practicing same topics above in the Labs.	(2 hrs)
<b>19. Examinations:</b>	
<b>1. Compositional:</b>	
<ul style="list-style-type: none"> <li>a- How would you be able to add a text to a certain frame?</li> <li>b- Draw the output of the following statement: drawArc(100, 100, 50, 50, 90, 270)</li> <li>c- State two methods of setting the color for the graphics object (only the code).</li> <li>d- Draw a pentagon shape on a JPanel object.</li> <li>e- Explain in brief, how event handling works?</li> </ul>	
<b>2. True or false type of exams:</b>	
State where each of the following statements that follows is true or false. If false, explain why.	
<ul style="list-style-type: none"> <li>a) A <u>frame</u> is a container object which can hold other user interface elements such as buttons, menus, etc.</li> <li>b) Java uses the <u>Toolkit</u> class to access system-dependent information.</li> <li>c) The <u>setFont</u> method of the java.awt.Graphics class lets you select a color that is used for the subsequent drawing operations on the graphics context or component.</li> <li>d) A <u>subclass</u> is a class that is defined inside another class.</li> <li>e) When you compile Inner classes, they are given the name of <u>InnerClass\$OuterClass</u> format.</li> <li>f) By default, the content pane uses <u>BorderLayout</u> as its layout manager.</li> </ul>	
<b>3. Blanks:</b>	
<ul style="list-style-type: none"> <li>a) The <i>Toolkit</i> class has a method called _____ which returns the screen size as a dimension object.</li> <li>b) A <i>Font</i> object takes 3 parameters: the _____, the _____ and the _____.</li> <li>c) When a certain class implements the <i>ActionListener</i> interface, it needs to override the _____ method in order to be a concrete class and respond to events.</li> <li>d) A(n) _____ provides an empty implementation of all methods in an event listener interface.</li> <li>e) The _____ method is called by Java every time the panel needs repainting.</li> </ul>	

**20. Extra notes:**

None.

**21. Peer review**

**پیداچونہوہی ھاوہل**

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.

*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*

نہم کورسبوو کہ دہبیت لہ لایہن ھاوہل نیکی ئەکادیمیہوہ سہیر بکرنیت و ناوہرۆکی بابہتہکانی کورسہکە پەسەند بکات و جەند ووشەیک بنووسیت لەسەر شیاوی ناوہرۆکی کورسہکە و واژووی لەسەر بکات. ھاوہل ئەو کەسەیکە زانیاری ھەبیت لەسەر کورسہکە و دہبیت پلہی زانستی لہ ماموستا کەمتر نەبیت.