

uCertify

Course Outline

Object-Oriented Analysis, Design and Implementation



10 Jun 2026

1. Exercises, Quizzes, Flashcards & Glossary

Number of Questions

2. Expert Instructor-Led Training

3. ADA Compliant & JAWS Compatible Platform

4. State of the Art Educator Tools

5. Award Winning Learning Platform (LMS)

6. Chapter & Lessons

Syllabus

Chapter 1: Preface

Chapter 2: Introduction

Chapter 3: Basics of Object-Oriented Programming

Chapter 4: Modeling Object-Oriented Systems

Chapter 5: Analyzing a System

Chapter 6: Designing a System

Chapter 7: Implementing a System

Chapter 8: Designing for Reuse

Chapter 9: Modeling with Finite State Machines

Chapter 10: Interactive Systems and the Model–View–Controller Architecture

Chapter 11: A Deeper Look Into Inheritance

Chapter 12: Appendix: Java Essentials

Videos and How To

7. Live labs

Lab Tasks

Here's what you get

1.  Exercises

There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.

45
EXERCISES

2. Quiz

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.

150
QUIZ

3. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.

100
FLASHCARDS

4. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.



5. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

6. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

7. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

8. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
 1. Best Postsecondary Learning Solution

- **2015**
 1. Best Education Solution
 2. Best Virtual Learning Solution
 3. Best Student Assessment Solution
 4. Best Postsecondary Learning Solution
 5. Best Career and Workforce Readiness Solution
 6. Best Instructional Solution in Other Curriculum Areas
 7. Best Corporate Learning/Workforce Development Solution

- **2016**
 1. Best Virtual Learning Solution
 2. Best Education Cloud-based Solution
 3. Best College and Career Readiness Solution
 4. Best Corporate / Workforce Learning Solution
 5. Best Postsecondary Learning Content Solution

6. Best Postsecondary LMS or Learning Platform
7. Best Learning Relationship Management Solution

- **2017**

1. Best Overall Education Solution
2. Best Student Assessment Solution
3. Best Corporate/Workforce Learning Solution
4. Best Higher Education LMS or Learning Platform

- **2018**

1. Best Higher Education LMS or Learning Platform
2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**

1. Best Virtual Learning Solution
2. Best Content Authoring Development or Curation Solution
3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

9. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Preface

Chapter 2: Introduction

- What Is the Object-Oriented Paradigm?
- Key Concepts of Object-Oriented Design
- Other Related Concepts
- Benefits of the Paradigm
- Dealing with Drawbacks of the Paradigm
- History
- Discussion and Further Reading

Chapter 3: Basics of Object-Oriented Programming

- The Basics
- Implementing Classes
- Creating and Working with Related Classes
- Defining and Working with Collections
- Interfaces

- Abstract Classes
- Dealing with Run-Time Errors
- Inheritance
- Design Patterns
- Run-Time Type Identification
- The Object Class
- An Introduction to Generics in Java
- Discussion and Further Reading

Chapter 4: Modeling Object-Oriented Systems

- A First Example
- Choosing the Diagrams to Describe an Object-Oriented System
- Building a User Interface Model
- Building a Logical Model
- Modeling the Interaction Between Entities
- Modeling the Behavior of a System
- Discussion

Chapter 5: Analyzing a System

- Gathering the Requirements
- Building the User Interaction Model
- Defining Conceptual Classes and Relationships
- Using the Knowledge of the Domain
- Discussion and Further Reading

Chapter 6: Designing a System

- Initiating the Design Process
- Assigning Responsibilities to the Classes
- Designing the Classes
- Designing for Safety and Security
- Evaluating the Quality of the Software Design
- Discussion and Further Reading

Chapter 7: Implementing a System

- Organization of UserInterface and Library
- Populating the Database
- Modifying Relationships Between Objects

- Removing Objects
- Displaying Transactions
- Other Requirements
- Discussion and Further Reading

Chapter 8: Designing for Reuse

- Reusing Through Generic Implementations
- Using Reusable Types to Obtain Reusable Implementations
- Building an Inheritance Hierarchy
- Combining Inheritance and Composition
- The Importance of Substitutability for Reuse
- Discussion and Further Reading

Chapter 9: Modeling with Finite State Machines

- A Simple Example
- Requirements Analysis Using Finite State Modeling
- A First Solution to the Microwave Problem
- Critiquing the Simple Solution
- Using the State Pattern

- Communicating the Timing Events
- Replacing Event Conditionals with Polymorphism
- Employing the FSM Model for Other Types of Applications
- Discussion and Further Reading

Chapter 10: Interactive Systems and the Model–View–Controller Architecture

- The Model–View–Controller Architectural Pattern
- Analyzing a Simple Drawing Program
- Detailed Use Cases for the Drawing Operations
- Designing the Drawing Program
- Implementation
- Pattern-Based Solutions
- Discussion and Conclusion

Chapter 11: A Deeper Look Into Inheritance

- Applications of Inheritance
- Inheritance: Some Limitations and Caveats
- Working with Inheritance

- Transmitting Complex Properties Using Inheritance
- Using LSP to Verify Substitutability*
- Multiple Inheritance*
- Discussion and Further Reading

Chapter 12: Appendix: Java Essentials

- A.1 Language Basics
- A.2 A Simple Java Program
- A.3 Primitive Data Types
- A.4 Relational Operators
- A.5 A Note on Input and Output
- A.6 Selection Statements
- A.7 Loops
- A.8 Methods
- A.9 Arrays

Videos and How To

uCertify course includes videos to help understand concepts. It also includes How Tos that help learners in accomplishing certain tasks.

8

VIDEOS

19

MINUTES

10. Live Labs

The benefits of live-labs are:

- Exam based practical tasks
- Real equipment, absolutely no simulations
- Access to the latest industry technologies
- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

Lab Tasks

Basics of Object-Oriented Programming

- Using a Constructor and AutoCloseable
- Creating and Using a Class
- Using LinkedList in a Class
- Using an Interface
- Using an Abstract Class
- Implementing Class Inheritance
- Using Utility Methods
- Using Generics in Class

Modeling Object-Oriented Systems

- Building a Basic UI Model in Java
- Building a Logical Model for a College Registration System

Analyzing a System

- Building a Basic Library System

Designing for Reuse

- Using the Java Thread Class

Modeling with Finite State Machines

- Implementing the State Pattern
- Generating and Handling Timing Events
- Modeling a GUI using FSM

A Deeper Look Into Inheritance

- Implementing Object Cloning

Here's what you get

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LIVE LABS

16

VIDEO TUTORIALS

22

MINUTES

You can't stay away! Get

in touch with our team to

know how we can work