The University of Jordan
School of Engineering
Department of Computer Engineering
Fall Term – A.Y. 2023/2024

Course:	Object-oriented Engineering Problem Solving 0907342 (3 Cr. – Core Course)
Catalog Data:	Problem solving techniques for engineering problems, primarily from the fields of electrical and computer engineering; object-oriented programming concepts; object-oriented program development, editing, compiling, linking, and debugging using the Object Oriented Programming languages.
Prerequisites by Course:	Computer Skills (1&2): 1900100 & 1901102.
Prerequisites by Topic:	Introduction to computers, programming, logical operations, and C++ programming.
Co-requisite:	Object Oriented Engineering Problem Solving Lab
Textbook:	• **Y. Daniel Liang, "Introduction to Java Programming", 10th edition, Prentice Hall.**
References:	• Herbert Schildt, ***Java: A Beginner's Guide***, 6th Edition, McGraw-Hill Education, May 2014. • Adnan Aziz, Tsung-Hsien Lee, and Amit Prakash, ***Elements of Programming Interviews in Java: The Insiders' Guide***, CreateSpace Independent Publishing Platform, September 2015. • Herbert Schildt, ***Java: The Complete Reference***, 9th Edition, McGraw-Hill Education, April 2014. • Y. Daniel Liang, ***Intro to Java Programming, Comprehensive Version***, 10th Edition, Pearson, January 2014. • Paul Deitel and Harvey Deitel, ***Java How To Program (Early Objects)***, 10th Edition, Prentice Hall, March 2014. • Joyce Farrell, ***Java Programming***, 7th Edition, Course Technology, January 2013. • Ralph Morelli, Ralph Walde, "**Java, Java, Java: Object-oriented Problem Solving**", 3rd Edition, Prentice Hall, 2005.
Course Website:	Course team on Microsoft Teams.
Schedule & Duration:	16 Weeks, 40 lectures, 60 minutes each (including exams). 9 Labs (3 hours each)
Minimum Student Material:	Text book, class handouts, some instructor keynotes, calculator and access to a personal computer and internet.
Minimum College Facilities:	Classroom with whiteboard and projection display facilities, library, and computational facilities.

Course Objectives:

The objectives of this course are:

1. Introduce students to object-oriented principles.
2. Introduce students to object-oriented programming using Java.

Course Outcomes and Relation to ABET Program Outcomes:

Upon successful completion of this course, a student should be able to:

- ✓ Use Java software development kit or other relevant engineering tools [1,2,6]
- ✓ Implement object oriented programs and understand the underlying principles such as encapsulation, abstraction and reuse. [6]
- ✓ Design and build more complex programs (multiple files and multiple objects). [6]
- ✓ Identify, formulate, and solve engineering problems [1]

Course Topics:

1. Introduction
2. Programming Fundamentals
3. Methods
4. Arrays
5. Objects & Classes
6. Inheritance & Polymorphism
7. Abstract Classes & Interfaces
8. Generics
9. Exception Handling and Text IO
10. JavaFX

Labs:

Lab-1: Programming Fundamentals
Lab-2: Methods
Lab-3: Arrays
Lab-4: Objects & Classes Part-1
Lab-5: Objects & Classes Part-2
Lab-6: Objects & Classes Part-3
Lab-7: Inheritance
Lab-8: Polymorphism & Generics
Lab-9: Abstract Classes & Interfaces

Computer Usage:

Practical Java experiments/programs will be covered in this course.

Attendance:

Class attendance will be taken every class and the university's polices will be enforced in this regard.

Assessments:

Exams, Quizzes, Labs and Assignments.

Grading policy:

Assignments	10%	
Quizes	10%	
Labs	10%	
Midterm Exam	30%	(Paper Exam + Practical-lab Exam)
Final Exam	40%	(Paper Exam + Practical-lab Exam)

Instructor:

Eng. Asma Abdelkarim
Email: asma_abdelkarim@hotmail.com
Office Hours: Sun, Tue 11:30 – 12:30
Mon 12:00 – 13:00

Class Time and Location:

Section 2: Sun and Tue 9:30 – 10:30

Section 1: Sun and Tue 10:30 – 11:30

Lab Sections:

Section 3: Sun 13:30-16:30

Section 4: Mon 10:00-13:00

Section 5: Mon 13:00-16:00

Section 6: Tue 13:30-16:30

Section 7: Wed 13:00-16:00

Program Outcomes (PO)

1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	an ability to communicate effectively with a range of audiences
4	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Last Updated: OCTOBER 1, 2023