University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Computing and Information Technology
Program: Computer Science

Form No. (12)
Course Specification

1- Course Data

Course Code: CS243	**Course Title:** Object Oriented Programming	**Academic Year/Level:** Year 2 / Semester 3
Specialization:	**No. of Instructional Units: 15** 1.5 hrs lecture 1.5 hrs lab 1.5 hrs section	**Lecture:**

2- Course Aim	This course introduces JAVA to students as an example of an object oriented programming language. The course starts with a briefing on Java history and the classifications of different Java editions. The concepts of classes and objects are introduced followed by a description of various types of class members. The course describes the concepts of abstraction and encapsulation and how to apply these concepts when creating classes. The course describes the object-oriented relationships: association, aggregation, composition, inheritance and implementation. Also the concept and role of polymorphism are introduced covering method overloading, method overriding, and dynamic method dispatching. Exception handling and the usage of Java API are presented with a concern to using javax.swing to build GUI applications.
3- Intended Learning Outcome:	
a- Knowledge and Understanding	**Students will be able to demonstrate knowledge of:** **K1.** Essential facts, concepts, principles and theories relating to computing and information and computer applications as appropriate to the program of study. **K3.** Tools, practices and methodologies used in the specification, design, implementation and evaluation of computer software systems. **K11.** Requirements, practical constraints and computer-based systems. **K13.** Use high-level programming languages. **K19.** Select advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.
b- Intellectual Skills	**By the end of the course, the student acquires high skills and an ability to understand:** **I1.** Analyze computing problems and provide solutions related to the design and construction of computing systems. **I3.** Identify criteria to measure and interpret the appropriateness of a

computer system for its current deployment and future evolution.

I13. Identify attributes, components, relationships, patterns, main ideas, and errors.

c- Professional Skills

By the end of the course the student will have the ability to:

P2. Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.

P3. Deploy the equipment and tools used for the construction, maintenance and documentation of computer applications.

d- General Skills

Students will be able to:

G1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.

G3. Show the use of information-retrieval.

G7. Show the use of general computing facilities.

4- Course Content

#	CLO
1	Understand object oriented design principles and programming using Java as an OOP language.
2	Using Java API (Math , String, Date, ArrayList, File,... etc.)
3	Understand method definition, invocation, overloading, encapsulation and information hiding.
4	Understand the class members, access modifiers, and Object instantiation.
5	Understand object oriented relations (associations, aggregation, composition, inheritance and interface, ... etc).
6	Understand class inheritance, reusability, method overriding, and polymorphism.
7	Understand abstraction, interfaces and inner classes.
8	Build user interfaces using Java swing package, and event driven programming.
9	Handle runtime exceptions.
10	Create simple software system using Java.

5- Teaching and Learning Methods

Lectures, Labs, Projects, Individual study & self-learning.

6- Teaching and Learning Methods for Students with Special Needs

- Students with special needs are requested to contact the college representative for special needs (currently Dr Hoda Mamdouh in room C504)
- Consulting with lecturer during office hours.
- Consulting with teaching assistant during office hours.
- For handicapped accessibility, please refer to program specification.

7- Student Assessment:

a- Procedures used:

Exams and Individual Projects

b- Schedule:

Week 7 exam
Week 16 Final exam

c- Weighing of Assessment:	15% - Midterm Exam 5% - Lab Submissions 10% - Lab Quizzes 30% - Assignments 20% - Project 20% - Final Exam

8- List of References:	
a- Course Notes	From the Moodle on moodle.manalhelal.com
b- Required Books (Textbooks)	▪ Y Daniel Liang, Introduction to JAVA Programming, 9th Edition, Prentice Hall, 2011.
c- Recommended Books	▪ Herbert Schildt, Java: The Complete Reference, 7th Edition, McGraw-Hill Osborne Media. ▪ Harvey M. Deitel, Paul J. Deitel, Java How to Program, 7th Edition, Prentice Hall.
d- Periodicals, Web Sites, …, etc.	

Course Instructor: **Head of Department:**

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