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<b>Information Technology Program</b>	
<b>Specialization</b>	<b>Smart Device Engineering</b>
<b>Course Number</b>	<b>20412131</b>
<b>Course Title</b>	<b>Programming Using JAVA Language</b>
<b>Credit Hours</b>	<b>3</b>
<b>Theoretical Hours</b>	<b>2</b>
<b>Practical Hours</b>	<b>1</b>

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وصف المادة الدراسية:

- ❖ This course discuss how is using Java, an object oriented language. You do not need to have experience with Java, but some basic knowledge. Students learn how to design algorithms to solve problems and how to translate these algorithms into working computer programs. Experience is acquired through programming projects in a high level programming language.

أهداف المادة الدراسية:

After studying this course the student should: Knowledge and understanding

1. Understand some advanced programming concepts
2. Deal with complex data objects as whole entities, rather than by twiddling with their elements
3. Cognitive skills (thinking and analysis).
4. Define the problem and write large programs
5. Analyze a problem and determine what problem elements to represent as functions or objects

## الوصف العام:

رقم الوحدة	اسم الوحدة	محتويات الوحدة	الزمن
1.	Introduction to Computers and Java	1.1 Introduction 1.2 Computers: Hardware and Software 1.3 Data Hierarchy 1.4 Computer Organization 1.5 Machine Languages, Assembly Languages and High-Level Languages 1.6 Introduction to Object Technology 1.7 Operating Systems 1.8 Programming Languages 1.9 Java and a Typical Java Development Environment 1.10 Test-Driving a Java Application 1.11 Web 2.0: Going Social 1.12 Software Technologies	2 weeks
2.	Introduction to Java Applications	2.1 Introduction 2.2 Your First Program in Java: Printing a Line of Text 2.3 Modifying Your First Java Program 2.4 Displaying Text with <code>printf</code> 2.5 Another Application: Adding Integers 2.6 Memory Concepts	2 weeks
3.	Introduction to Classes, Objects, Methods and Strings	3.1 Introduction 3.2 Declaring a Class with a Method and Instantiating an Object of a Class 3.3 Declaring a Method with a Parameter 3.4 Instance Variables, set Methods and get Methods 3.5 Primitive Types vs. Reference Types 3.6 Initializing Objects with Constructors 3.7 Floating-Point Numbers and Type <code>double</code>	3 weeks
4.	Control Statements: Part 1	4.1 Introduction 4.2 Algorithms 4.3 Pseudocode 4.4 Control Structures	3 weeks

		<p>4.5 <code>if</code> Single-Selection Statement</p> <p>4.6 <code>if...else</code> Double-Selection Statement</p> <p>4.7 <code>while</code> Repetition Statement</p> <p>4.8 Formulating Algorithms: Counter-Controlled Repetition</p> <p>4.9 Formulating Algorithms: Sentinel-Controlled Repetition</p> <p>4.10 Formulating Algorithms: Nested Control Statements</p> <p>4.11 Compound Assignment Operators</p> <p>4.12 Increment and Decrement Operators</p> <p>4.13 Primitive Types</p>	
5.	Control Statements: Part 2	<p>5.1 Introduction</p> <p>5.2 Essentials of Counter-Controlled Repetition</p> <p>5.3 <code>for</code> Repetition Statement</p> <p>5.4 Examples Using the <code>for</code> Statement</p> <p>5.5 <code>do...while</code> Repetition Statement</p> <p>5.6 <code>switch</code> Multiple-Selection Statement</p> <p>5.7 <code>break</code> and <code>continue</code> Statements</p> <p>5.8 Logical Operators</p> <p>5.9 Structured Programming Summary</p>	2 weeks
6.	Methods: A Deeper Look	<p>6.1 Introduction</p> <p>6.2 Program Modules in Java</p> <p>6.3 <code>static</code> Methods, <code>static</code> Fields and Class Math</p> <p>6.4 Declaring Methods with Multiple Parameters</p> <p>6.5 Notes on Declaring and Using Methods</p> <p>6.6 Method-Call Stack and Activation Records</p> <p>6.7 Argument Promotion and Casting</p> <p>6.8 Java API Packages</p> <p>6.9 Case Study: Random-Number Generation</p> <p>6.9.1 Generalized Scaling and Shifting of Random Numbers</p> <p>6.9.2 Random-Number Repeatability for Testing and Debugging</p> <p>6.10 Case Study: A Game of Chance; Introducing Enumerations</p> <p>6.11 Scope of Declarations</p> <p>6.12 Method Overloading</p>	2 weeks
7.	Arrays and ArrayLists	<p>7.1 Introduction</p> <p>7.2 Arrays</p> <p>7.3 Declaring and Creating Arrays</p>	1 week

		<p>7.4 Examples Using Arrays</p> <p>7.5 Case Study: Card Shuffling and Dealing Simulation</p> <p>7.6 Enhanced for Statement</p> <p>7.7 Passing Arrays to Methods</p> <p>7.8 Case Study: Class GradeBook</p> <p>Using an Array to Store Grades</p> <p>7.9 Multidimensional Arrays</p> <p>7.10 Case Study: Class GradeBook</p> <p>Using a Two-Dimensional Array</p> <p>7.11 Variable-Length Argument Lists</p> <p>7.12 Using Command-Line Arguments</p> <p>7.13 Class Arrays</p> <p>7.14 Introduction to Collections and Class ArrayList</p>	
8.	Classes and Objects: A Deeper Look	<p>8.1 Introduction</p> <p>8.2 Time Class Case Study</p> <p>8.3 Controlling Access to Members</p> <p>8.4 Referring to the Current Object's Members with the this Reference</p> <p>8.5 Time Class Case Study: Overloaded Constructors Set and Get Methods</p> <p>8.8 Composition</p> <p>8.9 Enumerations</p> <p>8.10 Garbage Collection and Method finalize</p> <p>8.11 static Class Members</p> <p>8.12 static Import</p> <p>8.13 final Instance Variables</p> <p>8.14 Time</p> <p>Class Case Study: Creating Packages</p>	1 week

طرق التقييم المستخدمة:

التاريخ	نسبة الامتحان من العلامة الكلية	الامتحانات
/ / التاريخ:	20%	الأول
/ / التاريخ:	20%	الثاني
/ / التاريخ:	10%	أعمال الفصل
/ / التاريخ:	50%	الامتحانات النهائية

طرق التدريس:

❖ Lecture

الكتب و المراجع:  
الكتاب المقرر:

1. Introduction to Java Programming, Brief Version, 9th edition  
Note: You do not need the comprehensive edition  
By Y. Daniel Liang  
Published by Pierson, 2011  
ISBN-10: 0-13-292373-4  
ISBN-13: 978-0-13-292373-6
2. [Java how to program, 9/e Deitel & Deitel](#)



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<b>Information Technology Program</b>	
<b>Specialization</b>	<b>Maintenance and Programming Smart Device</b>
<b>Course Number</b>	<b>20412131*</b>
<b>Course Title</b>	<b>Programming Using JAVA Language Lab</b>
<b>Credit Hours</b>	<b>1</b>
<b>Theoretical Hours</b>	<b>0</b>
<b>Practical Hours</b>	<b>2</b>

\* **Internal Lab.**

الوصف العام:

رقم التجربة	محتويات التجربة	الزمن
1	<b>Course Introduction</b> Computers in the world, programs and languages, course outline and logistics.	1 week
2	<b>Typing expressions, println</b> Modify HelloWorld, how to hand in assignments in OWL.	1 week
3	<b>Naming &amp; storing data</b> Objects, values and types, classes, primitive types, Strings, references: objects as properties of other objects, primitive types in memory, identifiers and literals.	1 week
4	<b>Practice with objects, classes, and primitive types</b> Declare & assign variables, create a simple class.	1 week
5	<b>Classes, Strings, and IO</b>	1 week
6	<b>Objects, Scanners</b>	1 week
7	<b>Looping and Conditionals</b>	1 week
8	<b>More Loops and Math</b>	1 week
9	<b>Methods</b> Note that InvestmentAccount.java and InvestmentSimulator.java are the complete class definitions. The other java files are intermediate (incomplete) versions.	2 week
	<b>Classes</b>	1 week
10	<b>While Loops, Wrappers, and Graphical I.O.</b>	1 week
11	<b>Graphical User Interface</b>	1 week
12	<b>Arrays</b> <b>More with Arrays</b> <b>Examples with Arrays</b>	3 weeks



طرق التقييم المستخدمة:

التاريخ	نسبة الامتحان من العلامة الكلية	الامتحانات
	30%	التقارير
	20%	الامتحان المتوسط
	50%	الامتحانات النهائية

طرق التدريس:

❖ تجارب عملية في المختبر

الكتب و المراجع:

الكتاب المقرر:

المراجع:

1. Introduction to Java Programming, Brief Version, 9th edition

Note: You do not need the comprehensive edition

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