



## MTA Introduction to Programming using Java

The MTA Introduction to Programming using Java course is excellent for someone wanting to learn how to code in Java, a powerful object-oriented programming language.

### ABOUT THIS COURSE

This course will improve employability prospects for any software development position requiring Java coding skills. Specifically, this course covers Java fundamentals, data types and variables, flow control, object-oriented principles, and compiling and debugging code. This course will also help students get ready to pass the MTA 98-388 exam.

These concepts are covered through simulating writing code for an online store, thus adding a real-life scenario to this course.

### COURSE OUTLINE

#### Session 1

**Section A - Introduction:** Course Opener, How to Study for the Exam, How to Set Up Visual Studio, Code.

**Section B - The Use of Main:** First Java File, Signature of Main, Consume a Class Instance, Command-Line Arguments.

**Section C - Basic Input and Output:** Print Statements, Import and Use the Scanner, Class.

**Section D - Variable Scopes:** Variables in Blocks, Variables in Methods, Variables in Classes.

#### Session 2

**Section A - Primitive Type:** Variables, Data Types and Initialization, Lost Precision, Primitives vs. Wrapper Object, Types.

**Section B - String Manipulation:** String Classes and Literals, String.format Methods, String Operators, Primitive Data Type to String Conversion, Immutable Nature of Strings, Initialization, Null.

**Section C - Arrays and ArrayLists:** One-Dimensional Arrays, Two-Dimensional Arrays, Other Array Creation Methods, ArrayLists and Adding, Elements, ArrayLists and Removing Elements.

**Section D - Parsing, Casting, and Conversion:** Casting and Conversion, Parse Strings to Numbers.

**Section E - Arithmetic and Assignment Operators:** Arithmetic Operators, Assignment Operators, Operator Precedence.

#### Session 3

**Section A - Branching Statements:** If Statements, Else Statements, Else If Statements, Switch Statements, Single-Line vs. Block Statements, Nesting Branch Statements, Logical Operators, Relational Operators.

**Section B - Loops:** While Loop, Do While Loop, For Loop, For Each Loop, Break, Continue, Nesting Loops, Logical and Relational Operators, Unary Operators.

#### Session 4

**Section A - Classes:** Build a Class, Constructors, Constructor Overloads, Classes per Java File, The This Keyword, Inheritance, Overriding.

**Section B - Class Data Members:** Private, Public, Protected, Instance and Static Data, Members, Use Static Final to Create Constants, Encapsulation.

**Section C - Methods:** Private, Public, Protected, Methods, Method Parameters, Return Type and Value, Voids, Instance and Static Methods, Overloading.

**Section D - Instantiate and Use a Class Object:** Instantiation and Initialization, Null Use, Access and Modify Data Members, Import Packages and Classes.

#### Session 5

**Section A - Syntax, Logic, and Runtime Errors:** Print Statement Debugging, Javac Command Output, Analyze for Logic Errors, Console Exceptions, Evaluate a Stack Trace.

**Section B - Exception Handling:** Try Catch Finally, Exception Class, Exception Class Types, Display Exception Information.

**Section C - Course End:** Course Recap, Conclusion.

### PRE-REQUISITES

There are no specific pre-requisites required before starting this course.

### COURSE DURATION - AROUND 50 HOURS

*(Actual course duration will vary from individual to individual, based on prior skills and application).*

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