Welcome to Java Programming

Come on, the water's great!
We're gonna write some code, compile it, and run it. We're talking syntax, looping and branching, and a look at what makes Java so cool. You'll be coding in no time.
Why do I want to take this course?

- I want to major in EE/CSE. ECE122 is a requirement.
- Java is hot in Job market. It is useful for my career.
- My friends are taking this course.
- I am just curious…
ECE122 Course Website

- Syllabus
- Office Hours. Contact info.
- Lab, Quiz, Exam & Homework problem sets and answers
- Announcements
Lecturers and TAs

- Lecturers
  John Zhang, Chris Hoffmann
- TAs
  Claudiu Fatu
  Teng Fei
  Richa Prasad
  Sarma Vangala
  JianHong Xia
Grade Composition

• 3 exams. 15%, 15%, 30%
• 4 quizzes. 2.5% each
• 7 labs. 4% each. 5% each for the last two labs.
Textbook

- “Head First Java”, Kathy Sierra & Bert Bates. O’ Reilly
- “Java™ 2: A Beginner’s Guide”, Herbert Schildt
What is a Computer?

- A device that computes.
- Has Hardware and Software.
- Hardware is the physical device.
- Software is the program that controls the function of the hardware and directs its operations.
- Software is written in a Programming Language.
What is Programming Language?

• A programming language is a high level language that contains instructions that controls a computer’s operations.
• Examples: Java, C++, C, Visual Basic, …
• Compiling. A programming language needs to be translated into a low level machine code before execution on a computer.
What is Java Programming Language?

- Simple
- Object-oriented. Objectville vs. procedureland
- Platform Independent
- Safe. No pointers. Live in virtual machine.
- Multi-threaded
- Garbage collected
How Java Works - 1

Source
1. Create a source document. Use an established protocol (in this case, the Java language).

Compiler
2. Run your document through a source code compiler. The compiler checks for errors and won’t let you compile until it’s satisfied that everything will run correctly.

Output (code)
3. The compiler creates a new document, coded into Java bytecode. Any device capable of running Java will be able to interpret/translate this file into something it can run. The compiled bytecode is platform-independent.

Virtual Machines
4. Your friends don’t have a physical Java Machine, but they all have a virtual Java machine (implemented in software) running inside their electronic gadgets. The virtual machine reads and runs the bytecode.
How Java Works – 2

1. Source
   - Type your source code.
   - Save as: Party.java

2. Compile
   - Compile the Party.java file by running javac (the compiler application). If you don't have errors, you'll get a second document named Party.class.
   - The compiler-generated Party.class file is made up of bytecodes.

3. Output (code)
   - Compiled code: Party.class

4. Virtual Machines
   - Run the program by starting the Java Virtual Machine (JVM) with the Party.class file. The JVM translates the bytecode into something the underlying platform understands, and runs your program.
Two most important web sites

- www.javasoft.com
- www.google.com
Three most used Java command

- **javac** -- Compile java source code into Byte code.
- **java** -- Run a Java application.
- **jar** -- Archive files.
Eclipse – Java IDE

- Free download from www.eclipse.org
Java Code Structure – 1

Put a class in a source file.
Put methods in a class.
Put statements in a method.
Java Code Structure--2

Put a class in a source file.
Put methods in a class.
Put statements in a method.
Java Code Structure – 3

Put a class in a source file.
Put methods in a class.
Put statements in a method.
Put a class in a source file.

Put methods in a class.

Put statements in a method.
public class HelloWorld
{
    public static void main(String[] args)
    {
        System.out.println("Hello World!");
    }
}
Your First Cup of Java – 2

• Save the source code to “HelloWorld.java”
• Compile the source code into Byte code: javac HelloWorld.java
• Run the Byte code: java HelloWorld or java –classpath . HelloWorld
Good Programming Practice

• Start with a working Java program, modify it, break it, learn what you have broken it, then fix it. Learn Java through lots of hands on exercise.
• Use Eclipse to help you to learn.
• Use Blank lines and space characters to enhance program readability
• By Convention, always begin a class name’s identifier with a capital letter and start each subsequent word in identifier with Capital letter. E.g. HelloWorld, PersonalProfile, etc.
• Whenever you write a opening left brace, {, immediate write a closing right brace, }.
• Indent the content between { and }
Common Programming Errors

- Java is case sensitive. Pay attention to the Keyword, Identifier. E.g. most of the keywords are lowercases. E.g. “class”, “public”, “main”
- Java source file name should be the public class name plus “.java”. E.g. “HelloWorld.java”
- It is an error that braces do not come in matching pairs. { and }

Introduction to Eclipse
Reading Assignment

• “Head First Java” chapter one.