

INST 5275/6275:

Multimedia Development with the Java Platform

Fall 2008, Utah State University, Room 271 Education Bldg (door code 8258)

Meeting Wednesdays from 1:30-4:00 August 27th to December 3rd

<http://itls.usu.edu/groups/java>

Facilitator: [Doug Holton](#)
Office & Hours: Education building room 205. Can meet after class or by appointment
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Course Description:

This course is designed to familiarize you with the development of multimedia applications on the Java platform. Java, along with Flash and Javascript, is one of the main platforms for developing interactive applications on the web. Our special focus will be on the development of instructional or educational java applications and applets.

Java is many things - it is a programming language, and it is a platform for running and developing software programs. Our course focuses more on the latter - what you can do with the java platform, especially multimedia/visual applications like graphics, games, and 3D applications.

Course Objectives:

- Become knowledgeable about the Java platform, including the java language and related technologies
 - Learn the basics of the Java programming language
 - Learn how to develop visual multimedia applications with Java technologies, especially for educational purposes
 - Learn how to use the Netbeans IDE to develop Java software
 - Learn about other non-Java technologies that run on the Java platform
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Audience:

This course is meant for those with little or no previous programming experience. You don't have to be a computer science major, or even desire to be a programmer in your future careers.

Accessing the Course Website & Lab Room:

We will be using a new kind of online 'group' site as a (blended learning) supplement to our in-class activities. It is sort of a combination of a mailing list, news site, plus blogs and a wiki. I will mainly be using it to post video screencasts and assignments. You will see an 'add new comment' link at the bottom of any of the pages I post, which you can use to ask questions or post comments. It is not necessary, but you can also register for an account on the site to create your own wiki pages or blog posts there. Here are various how-tos and videos about logging in and using the website:
<http://itls.usu.edu/wiki/website-how-tos>

Textbooks:

I'm not requiring the purchase of a textbook, although we will be using pieces from the books *Introduction to Computing & Programming with Java: A Multimedia Approach* (by Guzdial & Ericson) and *Simply Java Programming* (by Deitel and others). There is a [PDF of the first 4 chapters](#) of the Guzdial book available online for free, and I'll be scanning in some activities from the *Simply Java Programming* book.

There is a [free online java programming course](#) that focuses more on Java the language and its syntax. You are welcome to follow along that course concurrently with our own course. If you want to go on to develop your own real Java software, I also recommend the book *Java: How to Program* (by Deitel & Deitel) as a nice reference book, or the book *Head First Java* if you have taken Kevin Reeve's HTML class before and liked the style of the *Head First* programming books.

Software / Technology Requirements:

Greenfoot and all the other software we will be using are free. Go to <http://www.javafx.com/> and click the orange button to get the latest Java development kit (JDK) and [Netbeans](#) integrated development environment (IDE), which will be the primary tool we will use after doing some explorations with Greenfoot (<http://www.greenfoot.org>).

Assignments & Participation:

Participation (20% of grade)

You will get credit for attending the required courses. We will work out which classes are optional at a later date.

Assignments

There are essentially 6 assignments (which may be reduced to 5)

- **4 Mini Assignments (30%)**

- These will be smaller activities (similar to the Flash class), which I will walk you through. We will be using Greenfoot and Netbeans for these activities.
- The 4th assignment may be removed.

- **Final Project (35%)**

- This is the major project you will work on in the second half of the semester. Design and create your own educational/instructional software that runs on the Java platform, using Netbeans or other technologies.
- We will go over the details of this project at a later date, but it will be due at the end of the semester, and I would like a short write-up about your project, too (post-mortem), with a description of your software, and reflections on what you learned and what you would do to improve upon it.

- **Presentation & Demo Assignment (15%)**

- You'll pick one 'extra' non-java language technology that runs on the Java platform, learn about it, get a sample or demo running, and modify it slightly just to practice developing with that technology.
- Some examples include: Project Wonderland*, GWT, Scala, jMonkeyEngine, JavaFX*, Groovy/Grails, OpenSourcePhysics, Processing*, NetLogo* (* = more beginner friendly)

Grading:

University Grading Scale:	
A	100-93%
A-	92-90%
B+	89-87%
B	86-83%
B-	82-80%
C+	79-77%
C	76-73%
C-	72-70%
D	69-60%
F	59-0%

Participation and effort are what counts in this course. In this class you can get an A for effort. I will show you how to do the mini-assignments, and guide you the best I can with your final project. The presentation assignment I hope you will find enjoyable rather than a chore, to learn about a brand new technology that you can use with the Java platform, such as 3D multiuser worlds (Project Wonderland), artistic graphics (Processing), a flash-like alternative for the Java platform (JavaFX), an 'improved' Java language (Scala), and other options.

Tentative Class Outline:

This will be revised to better suit the needs & goals of the students.
The latest version of this outline is at: <http://itls.usu.edu/wiki/java/syllabus>

1. August 27th
 - Go over syllabus, goals, and 'programming: the new literacy'
 - **Topic: Introduction to the Java platform**
 - Introduce and Walk through Assignment 1: Greenfoot quick intro activity
2. September 3rd
 - **Topic: Object Oriented Programming** - classes, methods, fields
 - Readings:
 - Chapter 1 of Guzdial & Ericson book ([pdf version](#))
 - <http://java.sun.com/docs/books/tutorial/java/concepts/index.html>
 - <http://java.sun.com/docs/books/tutorial/java/javaOO/classes.html>
 - Class activity - Extending classes in Greenfoot, overriding methods
3. September 10th
 - [Assignment 1 due](#)
 - **Topic: Java Basics** - variables, statements, operators, control flow
 - Readings:
 - Chapter 2 of Guzdial & Ericson
 - <http://java.sun.com/docs/books/tutorial/java/nutsandbolts/index.html>
 - Introduce Assignment 2: Greenfoot example
4. September 17th
 - **Topic: More on Java Basics**
 - Walk through Assignment 2
 - Readings:
 - Chapter 3 of Guzdial & Ericson
5. September 24th
 - **No Class** - Open Education Conference
 - Please Read:
 - Chapter 4 of Guzdial & Ericson
6. October 1st
 - [Assignment 2 Due](#)
 - **Topic: Netbeans IDE**
 - Pictures & Graphics
 - Introduce Assignment 3: Applet example
7. October 8th
 - Work Week - Netbeans
8. October 15th
 - [Assignment 3 Due](#)
 - **Introduce Final Project**
9. October 22nd
 - Work Week - Netbeans
 - Introduce Assignment 4 (this may be removed)
10. October 29th
 - Work Week - Netbeans
11. November 5th
 - [Assignment 4 Due](#)
 - Work Week - Netbeans
12. November 12th
 - **Introduce Presentation & Demo Assignment**
 - Research an other java technologies. Some options include:
 - Project Wonderland*, GWT, Scala, jMonkeyEngine, JavaFX*, Groovy/Grails, OpenSourcePhysics, Processing*, Netlogo* (* = more beginner friendly)
13. November 19th
 - Work Week - Netbeans
14. November 26th
 - **No Class - Thanksgiving Break**
15. December 3rd
 - [Presentation & Demo Assignment Due: Advanced Topics Presentations & Demos](#)
16. December 10th
 - **Finals Week**
 - [Final Project & Writeup Due](#)

Online Resources, Tutorials, Readings

(These will be put on the class website)

Tools

Greenfoot

<http://www.greenfoot.org/>

Netbeans IDE

<http://www.netbeans.org/>

Combined Java & Netbeans Installer

<http://java.sun.com/javase/downloads/netbeans.html>

JavaFX

<http://javafx.com/>

<https://openjfx.dev.java.net/>

Project Wonderland

<https://lg3d-wonderland.dev.java.net/>

Google Web Toolkit (GWT)

<http://code.google.com/webtoolkit/>

Java Tutorials

The Java Tutorials

<http://java.sun.com/docs/books/tutorial/>

Learning Java - Resources

<http://www.netbeans.org/kb/articles/learn-java.html>

New to Java Programming Center

<http://java.sun.com/new2java/index.jsp>

Media Computation in Java

Resources for Media Computation section of course, including the 1st 4 chapters:

<http://coweb.cc.gatech.edu/mediaComp-plan/101>

More resources including walkthrough videos:

<http://coweb.cc.gatech.edu/mediaComp-plan>

Sequel book on data structures, Setting up DrJava, etc.

<http://coweb.cc.gatech.edu/cs1316/2>

Netbeans Tutorials

Netbeans Knowledgebase

<http://www.netbeans.org/kb/index.html>

Netbeans FAQ (if you have problems)

<http://wiki.netbeans.org/NetBeansUserFAQ>

Designing a Swing GUI in Netbeans

<http://www.netbeans.org/kb/60/java/quickstart-gui.html>

Creating a database-driven application in Netbeans

<http://www.netbeans.org/kb/61/java/gui-db-custom.html>

JavaFX Tutorials

Shapes, Binding, and Animation with JavaFX in Netbeans

<http://netbeans.tv/screencasts/Shapes%2C-Binding%2C-and-Animation-in-JavaFX-and-NetBeans-362/>

Java Books (some are available online for free from USU)

Netbeans IDE Field Guide

<http://proquest.safaribooksonline.com/0132395525>

Sams Teach Yourself Java 6 in 21 Days

<http://proquest.safaribooksonline.com/9780672329432>

Java for Dummies

<http://proquest.safaribooksonline.com/9780470087169>

Filthy Rich Clients - Developing Animated Java Applications

<http://proquest.safaribooksonline.com/9780132413930>

Simply Java Programming - book companion site

http://wps.prenhall.com/esm_deitel_simpjjava_1/

Introduction to Programming Using Java (online book)
<http://math.hws.edu/javanotes/>

GWT Resources

GWT for Netbeans
<https://gwt4nb.dev.java.net/>

GWT Extensions Demo
<http://www.gwt-ext.com/demo/>

The Future of Java

Java 6 update 10 (new java plugin, applets, etc.)
<https://jdk6.dev.java.net/>
<https://jdk6.dev.java.net/plugin2/>

Scala - new language improves greatly on java
<http://www.scala-lang.org/>

Other Java Technologies

Groovy & Grails
<http://groovy.codehaus.org/>
<http://grails.org/>

Processing
<http://processing.org/>

Open Source Physics
<http://www.compadre.org/osp/>