CS 0401 — Intermediate Programming using Java

Department of Computer Science
University of Pittsburgh
Spring 2019

Catalog Description

This is an intermediate course focusing on object-oriented programming and other fundamental programming concepts utilizing the Java programming language. Students are expected to have some previous programming experience prior to taking this course.

Instructor Information

Name: Dr. Thumrongsak Kosiyatrakul (Tan)
Email: tkosiyat@cs.pitt.edu
Office: 6215 SENSQ
Office Hours: (TTh) 9:30 am – 12:00 pm and whenever my office door is open

Teaching Assistant Information

Name: TBA
Email: TBA
Office: TBA
Office Hours: TBA
Note: **Please check CourseWeb for updated information**

Grader Information

Name: TBA
Email: TBA
Office: TBA
Office Hours: TBA
Note: **Please check CourseWeb for updated information**

Meeting Time and Location

Lecture: (MW) 9:30 am – 10:45 am; IS 403
Recitation: (M) 1:00 pm – 2:50 pm; 6110 SENSQ
Recitation: (Th) 11:00 am – 12:50 pm; 6110 SENSQ
Recitation: (F) 12:00 pm – 1:50 pm; 6110 SENSQ

Course Web Address

We will use CourseWeb for announcements, lecture slides, examples, projects, labs, pop quizzes solutions, and exam solutions. Make sure you are able to access the CourseWeb at `courseweb.pitt.edu` or via `my.pitt.edu`.

Textbook

Starting Out with Java, From Control Structures through Objects, Seventh Edition, by Tony Gaddis [ISBN-10: 0-13-480221-7, Publisher: Pearson]

Prerequisites

Previous programming experience (preferably, but not necessarily, in Java). Experience must include variables, expressions, control statements (loops and conditions), arrays, methods (functions) and more.

Outcome Measurement

Your final grade is based on the following:

- **Midterm Exam** (20% of final grade)
- **Final Exam** (20% of final grade)
- **Projects** (40% of final grade): There will be 4 projects (10% each) throughout this semester. Projects and their instructions will be posted on the CourseWeb. **No late submission will be accepted**.
- **Labs/Recitation** (15% of final grade): There will a number of very small programming assignments (labs) throughout the semester. Each lab must be submitted onto CourseWeb by the due date before 11:59pm. **No late submission will be accepted**. Each lab is a very small programming assignment which should not take about an hour to finish. Your TA will explain some details/hints about each lab during recitation and help you if you have any problems. Note that it is a good idea for you to take a look at each lab and start working on it as soon as possible.

  These labs (recitation sessions) are mandatory. TA will check your name at the end of every lab. If you submit a lab but you do not attain that lab, 50% will be deducted from that lab. If you finish your lab early, you can show your result to your TA and let your TA checks your name right away.
- **Take Home Quizzes** (5% of final grade): Once in a while, you will receive an announcement at the end of a lecture as well as an email announcement that a take-home quiz is up on the CourseWeb. Each quizzes allow you to demonstrate what you have learned during lectures. These are open book and open note quizzes. You can even read questions first and answer them later (no timer). However, you must submit the quiz before the due date stated on the CourseWeb. You are not allowed to take the quiz after the due date has past.

Note that the above weight may be changed during the semester. The scale for the term based on the class average at 75% is shown below (curve down is possible if the class average is lower than 75%):

Percentage	≥ 90	≥ 89	≥ 88	≥ 80	≥ 79	≥ 78	≥ 70	≥ 69	≥ 60	< 60
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D	F

Topics

The following is an outline of topics that will be covered:

- **Getting Start with Java**:

- **Language Basics**: keywords, identifiers, literals, variables, data types, primitive vs reference types, operator precedence, associativity
- **Scanner Class**: for input
- **Control Statement**: boolean expressions, rational operators, boolean operators, truth table, if, if-else, else-if
- **Errors**: Syntax vs run-time vs logic
- **Loops**: for, while, do statements
- **Methods**: value parameters, local variables, scope of variables
- **References**: reference types and their implications
- **Classes and Objects**: data abstraction, encapsulation, data hiding, private variable, instance methods, constructors, accessors, mutators, instance methods vs static methods
- **Compositions**: creating a new class utilize composition
- **Array**: sequential access, arrays as objects, array parameters, modifying and array, resizing, two-dimensional arrays
- **File**: introduction to text files, binary files and their differences, Serializable objects, writing objects to and reading objects from files
- **Searching**: sequential search and binary search with comparisons
- **ArrayList**: how to use
- **Sorting**: selection sort algorithm
- **Object Oriented**: topic and issue, inheritance, superclasses vs subclasses, protected variables, inheritance vs composition, polymorphism, method overloading, method overriding, accessing super versions of methods, accessing collecitons of data in a polymorphic way.
- **Abstract Classes**: interfaces, polymorphic access, parameterized generic types and methods
- **GUI**: event-driven programming, components, inner classes, layout managers, JPanel, JFrame, MouseListener, MouseMotionListener, adapter classes, WindowEvents
- **Exceptions**: throwing and handling of exceptions including exceptions in GUIs
- **Recursions**: recursive cases, base cases, implementation

Other Information

Academic Integrity

All students are expected to adhere to the standards of academic honesty. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty would be subject to disciplinary action. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity

http://www.pitt.edu/ provost/ail.html. This may include, but is not limited to the confiscation of the examination of any individual suspected of violating the University Policy.

Disability Services

If you have disability, contact both your instructor and the Office of Disability Resources and Services (DRS), 216 William Pitt Union, 412-648-7890/412-383-7355 (TTY) as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Statement on Classroom Recording

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.