Computer Science 241
Introduction to Problem-Solving and Programming
Thomas VanDrunen

Meeting time: MWF 3:15 - 4:20 pm.
Meeting place: Armerding 123
Office hours: TTh 1:30-4 pm or stop by whenever my door is open (Armerding 112)
Final: Tuesday, May 3, 1:30 pm. **Don't leave campus early.**
Textbook: Walter Savitch, *et al. Java: An Introduction to Computer Science and Programming*, third edition, Prentice Hall, 2004. Campus bookstore: $86.25 new, $64.75 used; publisher: $92; Amazon: $82.80 new, $47 used.
Website: `http://cslab.wheaton.edu/~tvandrun/cs241`.

Course goals:

- To learn the fundamentals of computer programming
- To become proficient in the Java programming language
- To understand the principles of object-oriented design
- To become familiar with fundamental data structures
- To become familiar with fundamental algorithms and their analysis

This course is an introduction to programming using Java intended for students with little or no programming experience. After covering the fundamentals of programming, the course will explore object-oriented programming and later move on to advanced and applied topics. The lecture material will be reinforced by programming projects (average one per week) and lab time (average one every other week) and further assessed by two tests and a cumulative final.

Assessment:

	weight
programming projects	50
test 1	12
test 2	12
final exam	26

Projects: Most of the work in this class is in writing computer programs. The assignments will be given the course website. They should be turned in by email. They will be graded on both their correctness and their conformity to style and documentation guidelines. Some students prefer to use their own computers instead of working in the lab. Do this at your own risk. You will not be given exceptions on program correctness or due dates/times for problems with compatibility with the lab or file transfer.

Honesty policy: Classmates may help each other out by answering questions about the language, etc, but you must do you own work. Assignments on which students have collaborated will not be accepted.

Late assignment policy: You are allowed a total of two days during the course of the semester—either one assignment two days late or two assignments one day late each. Other late assignments will not be accepted.

Readings: A course schedule is found on the website indicating relevant sections in the textbook. You are responsible for reading the textbook to supplement the lectures. Always bring the textbook with you when you come to lab days and work on assignments; it is your primary Java reference.

Topics are arranged under four basic headings: fundamentals, object-orientation, advanced topics, and applied topics.

Fundamentals

- First Java program
- Variables and identifiers
- Primitive types, expressions, values, and operators
- Strings and string operators
- Flow of control
- The boolean type
- Switch statements
- Loops
- Methods
- Scope
- Recursion

Object-orientation

- Classes
- Members
- Objects and references
- Static members
- Overloading
- Arrays
- Extension and inheritance
- Abstract classes and members
- Interfaces
- Polymorphism

Advanced topics

- Exceptions
- Data structures
- Vectors
- Linked structures
- Packages

Applied topics

- Sorting
- Analysis
- File I/O
- Applets
- GUIs using Swing