Syllabus

Handout 1
CSCI 136: Spring 2014
7 February

Data Structures and Advanced Programming

Instructor	Prof. Jeannie Albrecht
Office	TCL 304
Phone	597-4251
Email	jeannie@cs.williams.edu
Office Hours	MTh 1:30p–3:00p or by appt
TAs	Rebecca Lewis, Llewellyn Smith, Rahul Nath, Noah Grumman, Pamela Mishkin, and Diwas Timilsina
Lectures	MWF 10a–10:50a in Griffin 6
Labs	W 12p–2p, 2p–4p in TCL 216 & 217a
Web Page	`http://www.cs.williams.edu/~jeannie/cs136/index.html`

Texts

We will be using the $\sqrt{7}$ edition the following text book:

- *Java Structures: Data Structures in Java for the Principled Programmer,* $\sqrt{7}$ *E*dition, Duane Bailey.

We will provide this text book as a course reader. You must use this edition. You may pick up a copy of the course reader from Amanda Turner in TCL 303. A PDF version is also available on the course website.

Course Objectives

This course couples work on program design, analysis, and verification with an introduction to the study of data structures. Data structures capture common ways in which to store and manipulate data, and they are important in the construction of sophisticated computer programs. We will use the Java programming language in class and for the assignments.

Students will be expected to write several programs, ranging from very short programs to more elaborate systems. Since one of our goals in this course is to teach you how to write large, reliable programs composed from reusable pieces, we will be emphasizing the development of clear, modular programs that are easy to read, debug, verify, analyze, and modify.

We will use the computers in TCL 216 & 217a for the programming assignments. You will be given door codes to access this room once the semester begins.

Course Work

There will be weekly lab programming assignments. All programs will be graded on design, documentation and style, correctness, and efficiency. Programs should be turned in electronically by noon on the due date, typically the Monday after lab. Each student may use a maximum of **three free late days** during the course of the semester. A late day permits you to hand in an assignment up to 24 hours late, without penalty. Once those late days are exhausted, late labs will be penalized 20% per day. Programs will not be accepted more than four days late. To use a late day, **you must email your instructor in advance and include a note to the graders** in the comments at the top of your files. **Attendance in lab is mandatory.** Repeated absence from or tardiness to lab will result in failure of the course.

There will also be two midterm exams and a self-scheduled final exam.

Grades will be determined as follows:

Final exam:	25%
Midterms:	17.5% each
Programs/Labs:	35%
Class Participation:	5%

Honor Code

Homework and lab assignments are to be the sole work of each student unless the assignment explicitly states otherwise. Students may discuss issues related to an assignment, provided that such discussions are cited in the material turned in. However, students may not collaborate on designing or writing code. Uncredited collaborations will be considered a violation of the honor code and will be handled appropriately. If in doubt of what is appropriate, do not hesitate to ask me. For a full description of the Computer Science Honor Code, please see `http://www.cs.williams.edu/the-cs-honor-code-and-computer-usage-policy/`.

Tentative Schedule

This will undoubtedly change as we begin to explore these topics, but here is a tentative schedule.

Date	Mon	Wed	Fri
Feb 7			Overview *Bailey*, Ch. 0
Feb 10–Feb 14	OOP and Java	More Java *Bailey*, Ch. 1	*Winter Carnival*
Feb 17–Feb 21	Assert and Assoc *Bailey*, Ch. 2	Vectors *Bailey*, Ch. 3	More Vectors *Bailey*, Ch. 4
Feb 24–Feb 28	Complexity *Bailey*, Ch. 5	Recursion	Searching
Mar 3–Mar 7	Sorting *Bailey*, Ch. 6	Sorting	Sorting
Mar 10–Mar 14	Lists *Bailey*, Ch. 9	Lists **Midterm In Lab**	Lists
Mar 17–Mar 21	Lists/Stacks	Stacks *Bailey*, Ch. 10	Queues
Mar 24–Mar 28	*Spring break*	*Spring break*	*Spring break*
Mar 31–Apr 4	*Spring break*	*Spring break*	*Spring break*
Apr 7–Apr 11	Iterators *Bailey*, Ch. 7,8	Iterators/Order *Bailey*, Ch. 11	Order
Apr 14–Apr 18	Trees	Implementing Trees *Bailey*, Ch. 12	Tree Traversals
Apr 21–Apr 25	Tree Representation	Priority Queues *Bailey*, Ch. 13	Heaps
Apr 28–May 2	Heapsort	Binary Search Trees **Midterm 2 in Lab**	Binary Search Trees *Bailey*, Ch. 14
May 5–May 9	Binary Search Trees	Graphs *Bailey*, Ch. 16	Graphs
May 12–May 16	Graphs	Dictionaries *Bailey*, Ch. 15	Hashtables