CSCI 1321 (Principles of Algorithm Design II), Spring 2003

Syllabus

1 Course description

This course is the second course for computer science majors, following the guidelines established by the Association for Computing Machinery. It builds on the material of the first course, but with more emphasis on the object-oriented paradigm. This course also partially satisfies the requirements for *Understanding the World Through Science* of the common curriculum.

Course goals

- Increased ability to solve problems using computer programs of your own construction.
- Ability to use more complex data structures and algorithms in the solution of such problems.
- Basic understanding of how large programming projects can behave and what you can do to make them easier to work with and more flexible.

Course topics

- Review of control structures, functions, and primitive data types.
- Object-oriented design and programming: encapsulation and information hiding; classes; inheritance; polymorphism.
- Fundamental data structures: arrays, linked lists, stacks, queues, and simple trees.
- Fundamental algorithms: sorting and searching.
- Recursion.
- Introduction to event-driven programming.
- Use of a simple graphics API and GUI construction.
- Basic analysis of algorithms.
- Dynamic memory and dynamically allocated objects.
- Use of standard library classes.

2 Basic information

Class meeting times and location

- Section 3: MWF 10:30am – 11:20am, Halsell 228.
- Section 4: MWF 11:30am – 12:20pm, Halsell 228.

Prerequisites

- CSCI 1320, or consent of instructor.

Instructor and contact information

- Dr. Berna Massingill.
- Office: Halsell 201L.
- Office phone: (210) 999-8138.
- E-mail: `bmassing@cs.trinity.edu`. (Often e-mail is the best way to reach me.)
- Office hours:
  - Monday/Wednesday 12:30pm – 1:30pm and 3:30pm – 5:00pm.
  - Tuesday/Thursday 11:30am – 2:00pm.

  In addition to these scheduled office hours, you are welcome to drop by and see if I am in my office and free to talk, or you can make an appointment by calling me or sending me e-mail. If I am not in my office during scheduled office hours, I should be somewhere in the building (perhaps in one of the labs helping another student), and there will usually be a note on my door saying where to find me.
- "Lab help" hours (hours when either Dr. Lewis or I will be in HAS 228 to help students in any section of this course):
  - Monday 3:00pm – 5:00pm.
  - Thursday 3:35pm – 5:35pm.

3 Course materials

Textbook

Ralph Morelli. *Object-Oriented Problem Solving: Java, Java, Java.* Prentice Hall, second edition, 2003.

Web page

Most course-related information (this syllabus, homework and reading assignments, etc.) will be made available via the World Wide Web. The course Web page is a starting point for Web-accessible course material; you can find it linked from my home page (`http://www.cs.trinity.edu/~bmassing`), directly at `http://www.cs.trinity.edu/~bmassing/Classes/CS1321_2003spring/`, or via Tiger's Lair (`http://bb.trinity.edu/`).

Other references

Many other books on Java are available. However, there are many online resources, which together with the textbook will probably be sufficient for this semester and a bit beyond.

4 Course requirements

Grading

Grades in this course will be determined by the results of two major exams (a midterm and a final), several in-class quizzes, several homework assignments, and class participation, weighted as follows.

Component	Maximum points
Midterm exam	100
Final exam	200
Quizzes	50
Homework	about 500
Class participation	50

Numeric grades will be calculated as a simple percentage, by dividing points earned on the above components by maximum points. These numeric grades will then be converted to letter grades based on a curve, but in no case will the resulting letter grades be worse than students would receive based on the following scheme.

Numeric grade	Letter grade
90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Exams

Exams are comprehensive but will emphasize the most recent material. They are scheduled as follows. Please plan accordingly.

- Midterm exam: March 5 in class.
- Final exam:
  - Section 3 (10:30am): May 10 at 2:00pm.
  - Section 4 (11:30am): May 7 at 2:00pm.

Quizzes

About every other week there will be a short in-class quiz. Dates will be announced via the course Web page. They will usually cover material from recent classes and reading; the questions will be similar in format to those you are likely to see on the major exams. There will be about six quizzes over the course of the semester, and the lowest grade will be dropped.

Homework assignments

Several homework assignments will be required for successful completion of this course. The assignments in this course will all be based around a single problem. Each assignment will require you to produce a solution to a specific part of the problem so that all can be used together in the end for a single application. Detailed requirements, including due dates and times, will be provided as part

of each assignment. You are encouraged to use the department's network of Linux machines, but unless otherwise specified for individual assignments, you may use any other system that provides a suitable environment.

Attendance

Regular class attendance is strongly encouraged; class participation grades will be based largely on attendance.

E-mail

Course-related announcements will sometimes be made by sending e-mail to the Trinity e-mail addresses of all registered students. Students are strongly encouraged to read mail sent to their Trinity addresses frequently. An archive of such announcements will be provided via the course Web page.

Late and missed work

Exams can be made up only in cases of documented conflict with a university-sponsored activity or documented medical emergency. Quizzes cannot be made up, but the lowest quiz score will be dropped, so you can miss one quiz without penalty.

Unless otherwise stated for a particular assignment, homework will be accepted up to one class period late, *but no more*, at a penalty of 10 percent off per working day. This penalty may be waived or additional time allowed *at the instructor's discretion* in cases of illness or conflict with a university-sponsored activity.

If you have unusual circumstances (as we all sometimes do), please discuss these with the instructor as far in advance as possible.

Collaboration and academic integrity

Unless otherwise specified, all work submitted for a grade (homework assignments, quizzes, and exams) must represent the student's own individual effort. Discussion of homework assignments and course material among students is encouraged, but not to the point where detailed answers are being written collectively. Answers that are identical beyond coincidence are in violation of Trinity's Academic Integrity Policy and *will result in disciplinary action, including, but not limited to, a failing grade on that assignment for all parties involved.* You are responsible for the security of your work, both electronic and hard copy.