Handout 1

COMP 363: Design and Analysis of Computer Algorithms (Section 001)
Spring 2005 Course Information & Syllabus

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Sometimes lecture notes or a summary will be available on the web. Other than that, if you have to miss a
class, get notes from another student; mine are typically pieced together from more than one place with a lot
of metacomments, which makes it hard for anybody but me to follow them. Also get copies of any missed
handouts (available on the web site). The handouts are numbered sequentially, starting with handout 0. On
handout 0, you need to fill in some information and return it to me promptly so you can be on the email list
and get access to the web site for the course.

Office Hours: In Lewis Towers 512E: 1:00–4:00pm on Tuesday and Thursday.
These are the guaranteed times to find me except as announced in advance. You should also feel free to look
for me at other times or make appointments.

Course Objectives: Students should gain basic skills in designing and implementing efficient and effective
computer programs. We will begin by developing models and mathematical tools for measuring the efficiency
of algorithms. Then students will be introduced to a variety of useful data structures and to algorithms for
a variety of fundamental problems. Finally, the course will provide an introduction to classification of
computational problems into different complexity classes. The course may include a small amount of actual
running of programs in addition to theoretical analysis.

Prerequisites: The formal prerequisites are COMP 271 and COMP 211 (which require COMP 170 and
MATH 118). The actual desired topical background includes: programming in a general-purpose language
including capabilities for recursion (e.g., Java or C), induction, basic calculus, basic probability, sets, per-
mutations and combinations. Familiarity with graphs and trees also provides a helpful head start. Except
for the programming, review material on most of these topics is included in the textbook. Also, there is a
bug in the evolving prerequisite structure in that one should have MATH 131 or MATH 161 before COMP
363. (This used to be a prereq for COMP 211.) The desired skills from MATH 131 or MATH 161 are to be
able to compute limits using L’Hospital’s Rule and to be able to find minima and maxima of a function by
differentiating.


Course Requirements: There will be several homework assignments, two midterm exams, and a final.
The weightings within the semester grade will be: Homework 20%, Exam I 20%, Exam II 25%, and Final
exam 35%.

Homework: Only homework turned in by the due date is guaranteed to be graded. Any special circum-
cstances that cause difficulty in meeting the deadlines should be brought to the attention of the instructor
in advance. Homework must be handed in at the beginning of class, since solutions may be handed out in
the same class on occasion. Homework turned in to my mailbox will generally not be graded, since I do not
check the box continually and cannot generally verify that homework was turned in before solutions were
distributed or discussed in class. If you cannot turn in homework in person, you should put it under the
door of my office.
**Exams:** The midterm exams, tentatively scheduled for week 6 and week 13, are 75 minutes long. The final exam is scheduled for 4:15–6:15pm on Thursday, May 12.

**Collaboration:** No collaboration is permitted on exams. Collaboration on homework is acceptable, but copying is not! (Safeguard your files and printouts.) You may discuss solution techniques with other students, but you must write up your solutions independently. If you obtain a solution through research, e.g., in the library, credit your source and write up the solution in your own words.

**Tentative Course Outline and Approximate Schedule:**

Recommended readings from the text are shown on a weekly basis. (When selected sections or subsections are listed, it is assumed that you will include the introduction of the corresponding chapter or section.)

Also included are some sections that may be consulted as needed for background on topics such as mathematical notations, probability, graph theory, etc. I’ve tried to flag the first point at which such sections may be useful.

2. (1/25) Growth of functions. Sections 3.1–2. Recurrences. 4.1–2. (Background reference: Section 3.2, Appendix A.)
3. (2/1) Recurrences continued. Section 4.3. Heapsort. Chapter 6. (Background reference: Section B.5.3.)
6. (2/22) Review for exam 1 and/or catchup on lecture material. Exam I on sections covered from parts I and II of book.
13. (4/19) Dijkstra’s algorithm. Section 24.3. (We will use some results from section 21.3.) Exam II on sections covered from parts III and IV of book plus Chapters 22–23.
15. (5/3) Proving problems NP-complete, and examples. Sections 34.3–5. Review or additional enrichment material or overflow from prior lectures.