

CS 311 Computational Structures - Fall 2009 - Syllabus

Instructor:

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Office Hours: W 1-3pm or by appt.

Course web page: www.cs.pdx.edu/~apt/cs311

Description

This course provides an introduction to automata theory, computability, and complexity.

Prerequisites

The formal prerequisites are CS250 and CS251. In practice, you need to have mastered these topics, which are all covered in the textbook by Jim Hein that is typically used in those courses:

- Finite and infinite sets. Proving that a set is finite, countably infinite, and uncountable.
- What does it mean for a set to be closed under an operation? Inductive definitions of sets.
- Formal grammars and how they work.
- Rigorous mathematical proofs and how to write them down, especially inductive proofs.
- Big-O and related notations for asymptotic behavior of functions.
- Propositional calculus. De Morgan's laws
- Relations: reflexive, transitive, and symmetric. Equivalence relations.

Texts

The following text is required:

John Hopcroft, Rajeev Motwani, and Jeffrey D. Ullman, *Introduction to the Automata Theory, Languages, and Computation*, 3rd ed., Pearson Addison-Wesley, 2007. The 2nd. edition of this book is an acceptable substitute. The only difference is that it doesn't give you access to the on-line Gradiance system. Use of Gradiance in this course will be optional; it is possible to purchase access to Gradiance without buying the 3rd edition.

We will cover most of the book. See the course schedule for details of which chapters and sections you should read, and by when.

You may find other textbooks useful; a selection of them is on the course web page.

A few additional required readings on topics not in IALC may be made available on the course web site from time to time.

Copies of lecture slides will be available in PDF format on the class web page, normally prior to the start of each lecture (but possibly not by much!). But not everything presented in lectures will be on these slides; it is your responsibility to attend class and take notes.

Assignments, Exams, Grading

There will be one homework assignment each week. Assignments will be published on the course web site. They must be submitted on paper, **in class** on the due date.

In general, late homeworks will *not* be accepted unless due to illness or arranged with the instructor in advance.

You may also find it useful to do the relevant Gradiance homeworks each week, but this is purely optional and will not affect your course grade.

There will be one midterm and a final exam.

Grading will be based 40% on homework, 25% on the midterm exam, and 35% on the final exam.

Computing Resources

There is very little programming required in this course, and what there is can be done on any machine that can compile and execute simple C programs. The CS department's Solaris and Linux networks will work fine for this; use the `gcc` compiler. Your own home machine or laptop will probably work fine too.

Staying In Touch

Keep an eye on the course web page for late-breaking announcements! Also, all students should subscribe to the course's mailing list `cs311list@cs.pdx.edu`; the subscription page for this list is accessible from the course home page. The instructor will use this list to communicate important announcements, homework hints, etc. Students may also use this list to alert the class to information of general interest (but see the next section).

Individual Work

All homework assignments and exams must represent your own, individual work. It is permissible to discuss assignments with other students, but the solutions must be recognizably your own. *Do not, under any circumstances, copy another person's work (even with their permission) and submit it as your own.* Cheating on an assignment or exam will result in an automatic zero grade for that piece of work, and the initiation of disciplinary action at the University level.

Disabilities

If you are a student with a disability in need of academic accommodations, you should register with Disability Services for Students and notify the instructor immediately to arrange for support services.