

- **Course:** Computational Models
- **Time & Place:** Monday, Wednesday and Friday 11:00am-12:10pm, Engineering 2, Room 192.
- **Discussion Sections:**
 - tbd
 - tbd
- **Instructor:** Delbert D. Bailey; office: E2 249B; e-mail: dbailey@cse.ucsc.edu
- **Teaching Assistant:** Josh Whittemore, email: jwhitt@cse.ucsc.edu
- **Office Hours:**
 - Bailey: Mondays 12:15pm-1:30pm, Thursdays 5:00-6:15pm, E2 249B.
 - Whittemore: tbd
- **Required Textbook:** *Introduction to the Theory of Computation*, by Michael Sipser, 1st Edition, PWS/Thompson, 1997.
- **Goal:** To cover most of the material contained in Chapters 0, 1, 2 and 3.
- **Syllabus:** The following is a tentative syllabus for the course:
 - Overview
 - Tools: Mathematical Objects and Proof Techniques
 - Deterministic Finite Automata
 - Non-deterministic Finite Automata
 - Rabin-Scott Theorem
 - Regular Languages and Regular Expressions
 - Kleene's Theorem
 - Non-regular Languages
 - Pumping Lemma
 - Myhill Nerode Theorem
 - Minimizing States
 - Push Down Automata
 - Context-free Grammars and Languages
 - Normal forms
 - Non-context-free languages
 - Pumping Lemma for context-free languages
 - Turing Machines and Recursively Enumerable Languages
 - Church-Turing Thesis
- **Evaluation:** The course work will be weighted as follows:

| | |
|--|-----|
| Final Examination | 40% |
| One Midterm Examination | 30% |
| Four in-class Quizzes (20 minute each) | 20% |
| Seven Homework Assignments | 10% |

- **Examination and Quiz Schedule:**

| | | | |
|----------|------------|--------------------|------------------|
| Quiz 1: | Friday, | January 14, 2005, | 11:00am-11:20am. |
| Quiz 2: | Friday, | January 28, 2005, | 11:00am-11:20am. |
| Midterm: | Monday, | February 7, 2005, | 11:00am-12:10pm. |
| Quiz 3: | Friday, | February 18, 2005, | 11:00am-11:20am. |
| Quiz 4: | Friday, | March 4, 2005, | 11:00am-11:20am. |
| Final: | Wednesday, | March 16, 2005, | 4:00pm-7:00pm. |

The examination and quiz schedule is fixed. In particular, requests for changes in the schedule will not be accommodated; if you have conflicts with this schedule, please do not enroll in the class. Also, *no* time extension will be given for late arrivals on quiz day or examination day.

- **Academic Integrity:** No form of academic dishonesty will be tolerated. Incidents of academic dishonesty will be reported according to UCSC's policy on academic integrity, the full text of which can be found at <http://oasas.ucsc.edu/avcue/integrity>. Specifically, if you are caught submitting work as your own in this class, that is not solely your own, or assisting others in doing so, a formal written report will be sent to your Department, the School of Engineering, and to your Provost and academic preceptor. Furthermore you will get a failing grade for the course and the incident will be noted in your evaluation.

- **Miscellanea**

- All homework assignments are to be handed in at the beginning of Class on Mondays.
- Solutions to homework problems will be presented in the discussion sections. They will not be posted.
- Attendance at discussion sections is required.
- We will distribute solutions to the problems in the quizzes and in the midterm examination, after the grading has been completed.
- We will *not* distribute or post “sample” examination problems or “sample” quiz problems.
- The class has a newsgroup, which is accessible from the class webpages. We will occasionally post announcements and reminders there, but we will *not* answer questions to homework problems on the newsgroup. The time and place to ask such questions and have them answered are the discussion sections and the office hours.

- **Other interesting textbooks, NOT required:**

- *Introduction to Automata Theory, Languages, and Computation*, by Hopcroft and Ullman, 1st Edition, Addison Wesley, 1979.
- *Introduction to Automata Theory, Languages, and Computation*, by Hopcroft, Motwani and Ullman, 2nd Edition, Addison Wesley, 2001.
- *Automata and Computability*, by Kozen, 1st Edition, Springer-Verlag, 1997.
- *Elements of the Theory of Computation*, by Lewis and Papadimitriou, 2nd Edition, Prentice Hall, 1998.
- *Introduction to Languages, and the Theory of Computation*, by Martin, 3rd Edition, Mc Graw Hill, 2003.